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starting points in **4** mathematics





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starting points in mathematics

Mathematics Team

Level 4

Authors:

Donald L. Bornhold
Barbara Robson
James F. Tennant
Stella Tossell
Gary D. White

Consultants:

Emery Dosdall
Ralph E. Gardner
Robert Gutcher
Jack A. Hope
Murray McPherson
Edward B. Murrin
Stewart West
Mary Wright

Project Editor:

Gary Scott

Editors:

Lynda Cowan
Joseph Will

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Artists

Irma Ikonen, Sandi Lamanna

Illustrators

Brenda Clark, Ron Berg, Sinae Lee

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Authors and Consultants

Donald L. Bornhold

Former Superintendent
North York Board of Education
North York, Ontario

Barbara Robson

Consultant
Frontenac
County Board of Education
Kingston, Ontario

Emery Dosdall

Director of
Program Supervision
Edmonton Public School Board
Edmonton, Alberta

Ralph E. Gardner

Supervisor of Intermediate
Instruction
Coquitlam School District
Coquitlam, British Columbia

Robert Gutcher

Assistant Superintendent
Metropolitan Separate School Board
Toronto, Ontario

Jack A. Hope

Assistant Professor
Department of Curriculum Studies
College of Education
University of Saskatchewan
Saskatoon, Saskatchewan

Dr. Murray McPherson

Head of Department of Mathematics
and Science Education
Faculty of Education
University of Manitoba
Winnipeg, Manitoba

Edward B. Murrin

Teacher
Antigonish County School Board
Antigonish, Nova Scotia

James F. Tennant

Mathematics Coordinator
Frontenac County Board of Education
Kingston, Ontario

Stella Tossell

Former Mathematics Consultant
North York Board of Education
North York, Ontario

Stewart West

Teacher
Magnetic Hill Public School
Moncton, New Brunswick

Gary D. White

Principal
Sunnyside Public School
Kingston, Ontario

Mary Wright

Mathematics Consultant
Montague, Prince Edward Island

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To the Students

Most of the lessons in this book are teaching lessons. Others are for practice.

The first part of a teaching lesson shows you what is to be learned.

Working Together

The second part of a teaching lesson allows you to check your understanding step by step.

For this part, you may work together with your teacher, with each other, or you may work by yourself to check your understanding.

Exercises

The third part of a teaching lesson gives you practice and lets you apply what you have learned.

Adding Three Numbers

2560 bales were taken from one field, 985 were taken from another, and 4398 were taken from a third field. How many bales were taken from the fields?

Add 2560, 985, and 4398.

$$\begin{array}{r} \text{Add ones} \quad 2560 \\ \text{and regroup.} \quad 985 \\ \hline 4398 \\ \hline 3 \end{array}$$

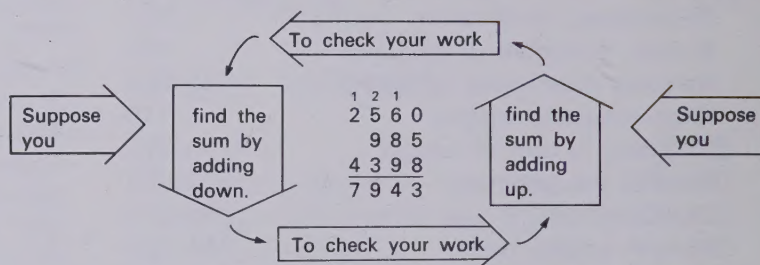
$$\begin{array}{r} \text{Add tens} \quad 2560 \\ \text{and regroup.} \quad 985 \\ \hline 4398 \\ \hline 43 \end{array}$$

$$\begin{array}{r} \text{Add hundreds} \quad 2560 \\ \text{and regroup.} \quad 985 \\ \hline 4398 \\ \hline 943 \end{array}$$

$$\begin{array}{r} \text{Add} \quad 2560 \\ \text{thousands.} \quad 985 \\ \hline 4398 \\ \hline 7943 \end{array}$$



There were 7943 bales taken from the fields.



Working Together

Show the addends with their places lined up in vertical form.

1. $3246 + 845 + 1056$

2. $807 + 98 + 1343$

Add by following the steps.

3.

4763
275
1876

Add ones and regroup.

Add tens and regroup.

Add hundreds and regroup.

Add thousands.

4.

7906
219
1817

Add and regroup if needed.

Add and regroup if needed.

Add and regroup if needed.

Add.

Find the sum by adding down in each column.

5. 1943
 2647
 3552

Find the sum by adding up in each column.

6. 1943
 2647
 3552

Add. Then add in the other direction to check your work.

7. 6473
 928
 1345

8. $\$4251$
 1984
 683

Exercises

Add. Then add in the other direction to check.

1. 367 8250 <u>386</u>	2. 4326 1583 <u>974</u>	3. 2866 1239 <u>3673</u>	4. 134 3235 <u>4678</u>	5. 865 7327 <u>1403</u>	6. 5324 3049 <u>888</u>
---	--	---	--	--	--

7. $4376 + 293 + 1406$	8. $2834 + 367 + 5144$	9. $286 + 3914 + 4773$
10. $3086 + 2143 + 4702$	11. $2309 + 1671 + 4235$	12. $4300 + 299 + 1934$
13. $628 + 114 + 7763$	14. $121 + 4404 + 3371$	15. $5368 + 205 + 3327$

16. 2185 6495 <u>485</u>	17. 5176 987 <u>928</u>	18. 1920 4951 <u>2934</u>	19. 218 4549 <u>3326</u>	20. $\$7282$ 632 <u>1026</u>	21. $\$1327$ 5329 <u>1345</u>
---	--	--	---	---	--

Special Features

Practice with addition, subtraction, multiplication, and division

KEEPING SHARP

Some interesting ideas for fun and enrichment

try this

Lessons and activities to help you learn the skills you need for solving problems

PROBLEM SOLVING

Special* exercises give you more practice with problem solving.

Checking Up

End-of-unit lessons let you check how you have done with the work in the unit.

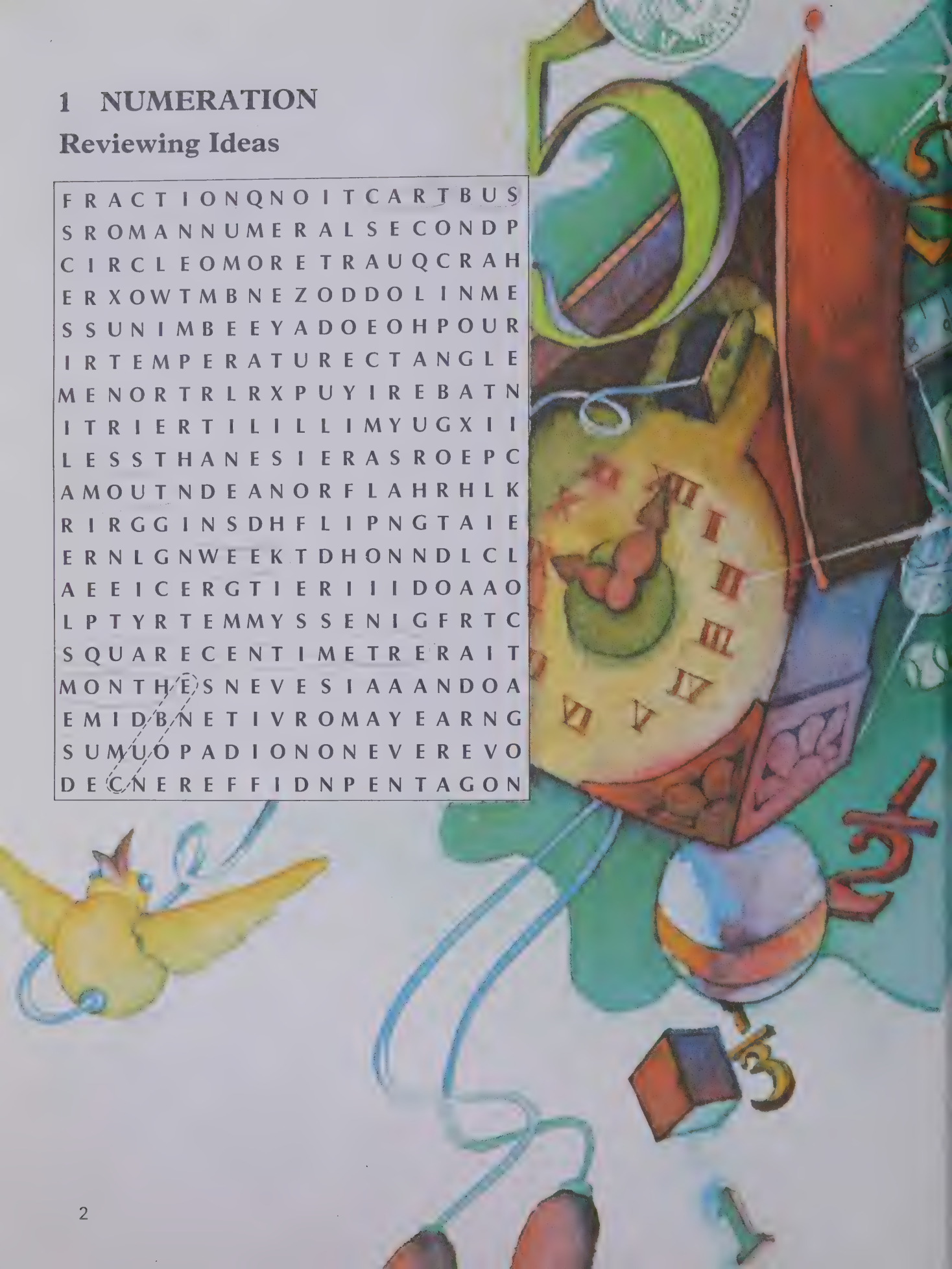
Checking Skills

Four special reviews let you check your skills with addition, subtraction, multiplication, and division.

1 NUMERATION

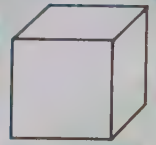
Reviewing Ideas

F R A C T I O N Q N O I T C A R T B U S
S R O M A N N U M E R A L S E C O N D P
C I R C L E O M O R E T R A U Q C R A H
E R X O W T M B N E Z O D D O L I N M E
S S U N I M B E E Y A D O E O H P O U R
I R T E M P E R A T U R E C T A N G L E
M E N O R T R L R X P U Y I R E B A T N
I T R I E R T I L I L L I M Y U G X I I
L E S S T H A N E S I E R A S R O E P C
A M O U T N D E A N O R F L A H R H L K
R I R G G I N S D H F L I P N G T A I E
E R N L G N W E E K T D H O N N D L C L
A E E I C E R G T I E R I I I D O A A O
L P T Y R T E M M Y S S E N I G F R T C
S Q U A R E C E N T I M E T R E R A I T
M O N T H E S N E V E S I A A A N D O A
E M I D B N E T I V R O M A Y E A R N G
S U M U O P A D I O N O N E V E R E V O
D E C N E R E F F I D N P E N T A G O N



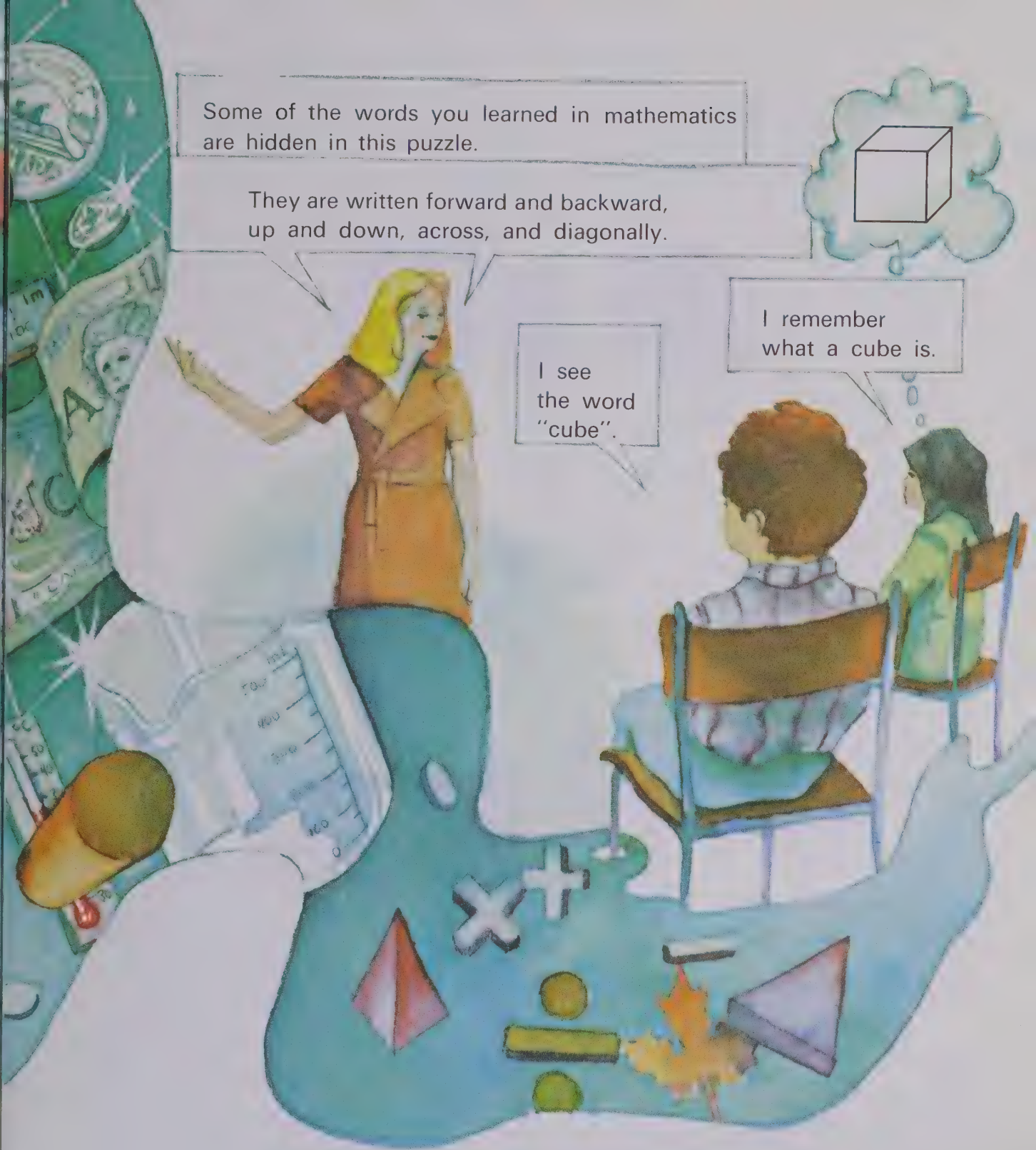
Some of the words you learned in mathematics are hidden in this puzzle.

They are written forward and backward, up and down, across, and diagonally.




I see the word "cube".

I remember what a cube is.



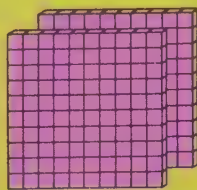
How many of the words can you find in the puzzle?
How many ideas do you remember?

Numbers to 999

How many 's are there?

10 tens
equal
1 hundred.

10 ones
equal
1 ten.



2 hundreds

200



3 tens

30



5 ones

5

hundreds	tens	ones
2	3	5

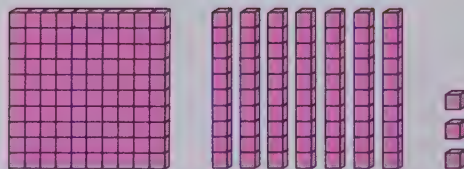
There are 235 's.

235 is the **standard form**
for *two hundred thirty-five*.

Working Together

For the picture,

1. how many hundreds?
2. how many tens?
3. how many ones?
4. how many in all?



Write the standard form for each.

5.

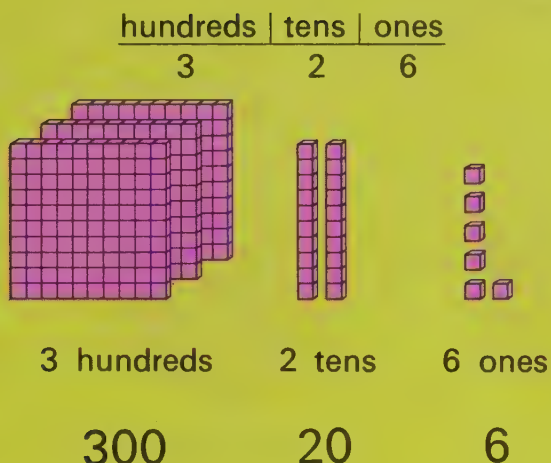
hundreds	tens	ones
4	6	7
6. six hundred twenty-two
7. two hundred nine
8. five hundred seventy

What does each digit mean in these numerals?

9. 236
10. 472
11. 105
12. 380

What does each **digit**
mean in the numeral 326?

three hundred twenty-six



The 3 in the hundreds place means 3 hundreds.

The 2 in the tens place means 2 tens.

The 6 in the ones place means 6 ones.

Exercises

For the picture,

1. how many hundreds?
2. how many tens?
3. how many ones?
4. how many in all?



Write the standard form for each.


	hundreds	tens	ones
5.	7	1	3
6.	3	9	6
7.	9	0	1
8.	5	3	2

9. four hundred thirty-two
10. six hundred four
11. eight hundred seventy
12. nine hundred sixteen

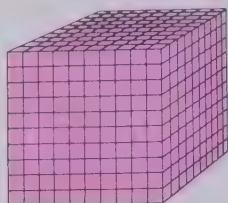
What does the 8 mean in each numeral?

- | | | | | | |
|---------|---------|---------|---------|---------|---------|
| 13. 218 | 14. 483 | 15. 817 | 16. 582 | 17. 708 | 18. 822 |
| 19. 280 | 20. 458 | 21. 891 | 22. 486 | 23. 928 | 24. 888 |

Numbers to 9999

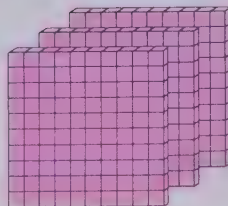
How many 's are there?

10 hundreds
equal
1 thousand.



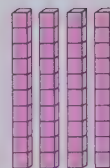
1 thousand

1000



3 hundreds

300



4 tens


40



5 ones

5

thousands	hundreds	tens	ones
1	3	4	5

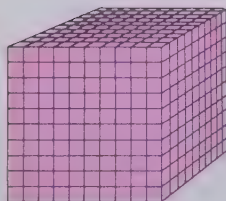
There are 1345 's.

one thousand three hundred forty-five

What does each digit
mean in the numeral 1453?

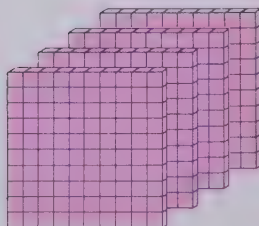
one thousand four hundred fifty-three

thousands	hundreds	tens	ones
1	4	5	3



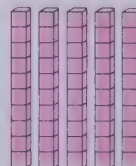
1 thousand

1000



4 hundreds

400



5 tens

50



3 ones

3

Working Together

Write the standard form for each.

	thousands	hundreds	tens	ones
1.	3	6	9	4
2.	5	0	1	8
3.	9	8	0	6

4. two thousand seven hundred thirty
5. four thousand fifty-eight
6. six thousand six

What does each digit mean in these numerals?

7. 7241
8. 1056
9. 2105
10. 4008

Do you know how to read these numerals?

909
99
999
990
9990
9090
9909
9099



Exercises

Write the standard form for each.

	thousands	hundreds	tens	ones
1.	2	3	7	2
2.	6	6	0	8
3.	1	0	1	9
4.	8	4	5	0

5. three thousand four hundred fifty-six
6. one thousand ninety
7. nine thousand eleven
8. seven thousand five hundred two

What does the 4 mean in each numeral?

9. 1124
10. 4306
11. 7422
12. 8743
13. 4908
14. 1452
15. 5934
16. 2046
17. 3400
18. 1004
19. 3545
20. 8424
21. 4417
22. 2644
23. 4404

Write the standard form for each.

24. 1 ten
2 thousands
3 hundreds
6 ones

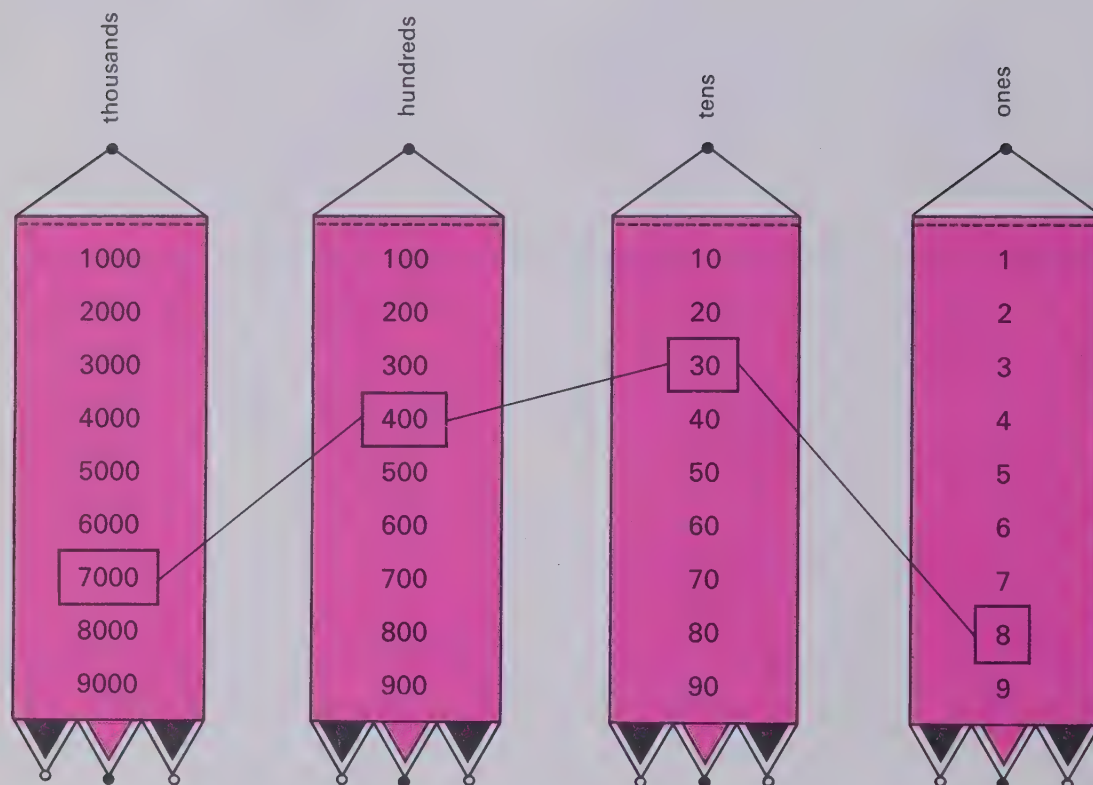
25. 4 hundreds
8 ones
6 tens
5 thousands

26. 5 hundreds
7 ones
9 thousands
0 tens

Expanded Form

The numeral **7438** means
7 thousands **4** hundreds **3** tens **8** ones.

thousands	hundreds	tens	ones
7	4	3	8



In **expanded form**,
 $7438 = 7000 + 400 + 30 + 8$.

Working Together

What does the marked digit mean in each numeral?

1. 4721
2. 3629
3. 9125
4. 5867

Show the expanded form for each.

5. 1256
6. 4209
7. 3064
8. 2050

Show the standard form for each.

9. $5000 + 600 + 30 + 5$
10. $3000 + 70 + 2$
11. $1000 + 600 + 10$

Exercises

Write the expanded form for each.

1. 9426 2. 7054 3. 6804 4. 5260 5. 2040 6. 1005

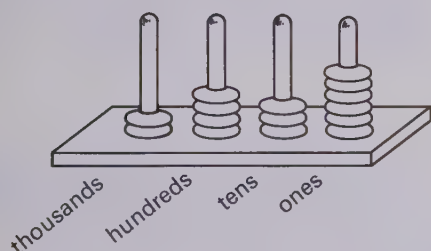
Write the standard form for each.

7. $8000 + 400 + 60 + 3$ 8. $1000 + 700 + 30 + 8$
 9. $9000 + 400 + 6$ 10. $5000 + 30 + 2$ 11. $7000 + 200 + 1$
 12. $2000 + 600 + 80$ 13. $6000 + 7$ 14. $1000 + 80$

Write the standard and expanded forms for each.

15. four thousand three hundred sixteen 16. nine thousand six hundred thirty
 17. seven thousand two hundred eleven 18. six thousand five hundred
 19. five thousand one hundred two 20. three thousand seventy-four
 21. two thousand eight 22. eight thousand ten

The rings on the pegs of this **abacus** show 2436.



Use an abacus or draw an abacus to show

1. 3825 2. 2029

On the abacus shown above, no peg can hold more than nine rings. When there are ten rings for one peg, trade them for one ring to be placed on the next peg to the left.

Show each of these on an abacus. If there are too many for one peg, trade 10 of them for an extra ring to place on the peg to the left.

	thousands	hundreds	tens	ones
3.	2	3	5	12
4.	2	11	3	15
5.	1	4	17	13
6.		3	9	10
7.	2	16	18	14
8.		9	12	11

How many different numbers can you show using only

9. one ring on the abacus above?
 10. two rings on the abacus above?

**try
this**

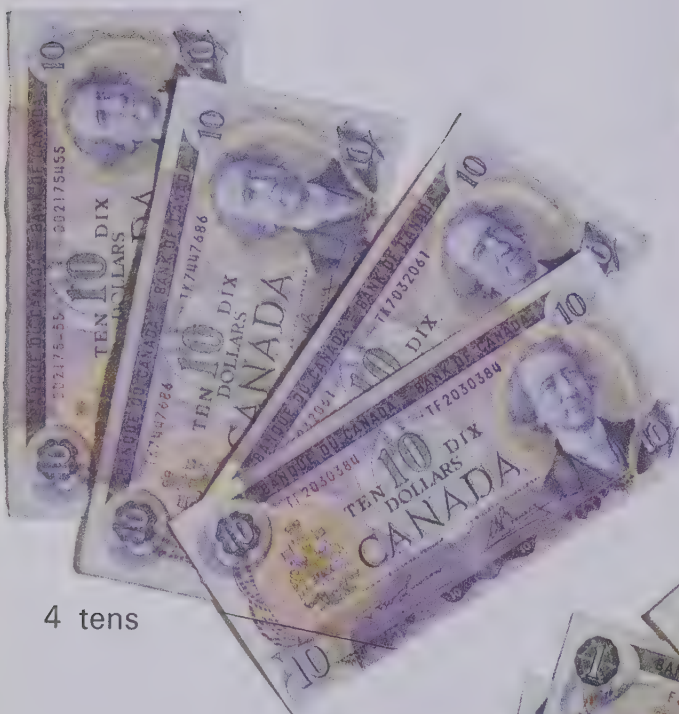
Practice



1 thousand



6 hundreds



4 tens







7 ones

1 thousand 6 hundreds 4 tens 7 ones = 1647 dollars.

\$1647

Copy and complete the chart.

					Amount
1.	2	6	2	7	\$2627
2.	?	?	?	0	\$4130
3.	3	0	3	5	?
4.	0	?	?	?	\$421
5.	1	2	0	0	?
6.	?	?	0	?	\$9405
7.	5	3	2	6	?
8.	6	0	1	0	?

What does each 5 mean?

9. 5418

10. 7952

11. 1005

12. 3510

What does each 0 mean?

13. 2016

14. 1307

15. 4000

16. 1290

Write the standard form for each.

17. 2 thousands 0 hundreds
4 tens 7 ones

18. 6 thousands 2 hundreds
4 tens 5 ones

19. 9 thousands 4 hundreds 6 ones

20. $7000 + 600 + 20 + 4$

21. 4 hundreds 7 tens 6 ones

22. $500 + 60 + 2$

23. nine thousand seven hundred

24. $8000 + 70 + 6$

25. two thousand four hundred two

26. $9000 + 800 + 50 + 6$

27. five thousand sixty-seven

28. 3 thousands 8 ones

Write the expanded form for each.

29. 8 thousands 3 hundreds 8 tens 2 ones

30. 1037

31. 5726

32. 2403

33. 7830

34. nine thousand six hundred fifty-five

35. four thousand twelve

36. nine hundred eight

37. 3740

38. 6500

39. 8020

40. 2002

Comparing and Ordering Numbers



An art collector paid \$2475 for a piece of sculpture and \$2875 for an oil painting. For which did the collector pay more?

Look at the digits from left to right.

\$ **2** 4 7 5 The digits are
\$ **2** 8 7 5 the same in the
 thousands place.

\$ 2 **4** 7 5 The digits are
\$ 2 **8** 7 5 different in the
 hundreds place.

8 is greater than 4, so
\$2875 is greater than \$2475.

$8 > 4$, so
 $2875 > 2475$

The collector paid more for the oil painting.

Sculpture	\$2475
Oil Painting	\$2875
Watercolor	\$1720
Drawing	\$1729

The prices on the list
in order, from greatest
to least, are

\$2875, \$2475, \$1729, \$1720

Working Together

Where are the digits first different,
in the thousands, hundreds, tens, or ones place?

- | | | | | | | | |
|--|------|--|------|--|------|--|------|
| 1. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1208</td></tr></table> | 1208 | 2. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>5076</td></tr></table> | 5076 | 3. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>3989</td></tr></table> | 3989 | 4. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>2652</td></tr></table> | 2652 |
| 1208 | | | | | | | |
| 5076 | | | | | | | |
| 3989 | | | | | | | |
| 2652 | | | | | | | |
| <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1091</td></tr></table> | 1091 | <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>5078</td></tr></table> | 5078 | <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>4120</td></tr></table> | 4120 | <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>2649</td></tr></table> | 2649 |
| 1091 | | | | | | | |
| 5078 | | | | | | | |
| 4120 | | | | | | | |
| 2649 | | | | | | | |

Which is greater,

5. 6 or 7? 6. 3574 or 3564? 7. 4286 or 4287? 8. 1701 or 1698?

List the numbers from greatest to least.

- | | | | | | | | | | |
|--|------|------|------|------|---|------|------|------|------|
| 9. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>4567</td><td>4527</td></tr><tr><td>4167</td><td>4563</td></tr></table> | 4567 | 4527 | 4167 | 4563 | 10. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>4785</td><td>6780</td></tr><tr><td>4780</td><td>4980</td></tr></table> | 4785 | 6780 | 4780 | 4980 |
| 4567 | 4527 | | | | | | | | |
| 4167 | 4563 | | | | | | | | |
| 4785 | 6780 | | | | | | | | |
| 4780 | 4980 | | | | | | | | |

Exercises

Use $>$ or $<$ to make true statements.

Examples: $4375 > 4075$ means 4375 is **greater than** 4075.

$4075 < 4375$ means 4075 is **less than** 4375.

- | | | |
|----------------------|----------------------|----------------------|
| 1. 2536 \odot 2653 | 2. 1984 \odot 1899 | 3. 4935 \odot 4952 |
| 4. 8118 \odot 8181 | 5. 2050 \odot 2005 | 6. 6572 \odot 7652 |

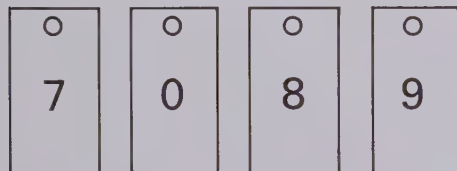
List from greatest to least.

7. 481, 976, 897, 148
8. 5310, 6922, 4000, 3939
9. 2493, 2397, 2923, 2402
10. 4443, 4344, 3444, 4444

List from least to greatest.

11. 959, 1095, 99, 2000
12. 3275, 3288, 3263, 3236
13. 9229, 2992, 2099, 9022
14. 7886, 7869, 7866, 7966

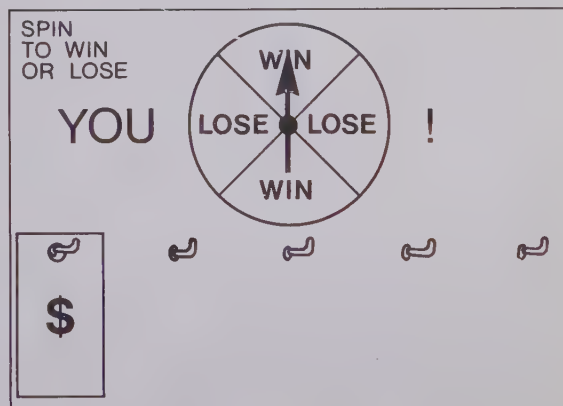
In a TV game show, you draw
these four cards



to hang on the hooks.

*15. What is the most you could win?

*16. How little could you lose?



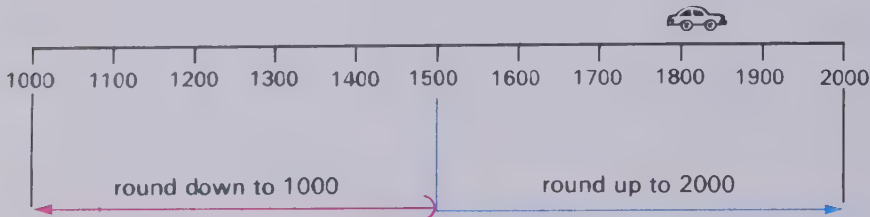
Rounding

The car has traveled 1826 km (kilometres).

Which statement is closer to being correct?

The car has traveled about 1000 km.

The car has traveled about 2000 km.

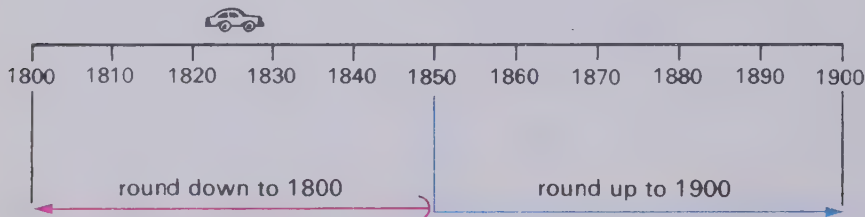


"The car has traveled about 2000 km"
is closer to being correct.

1826 rounded to
the nearest thousand
is 2000.

The car has traveled about 1800 km.

The car has traveled about 1900 km.

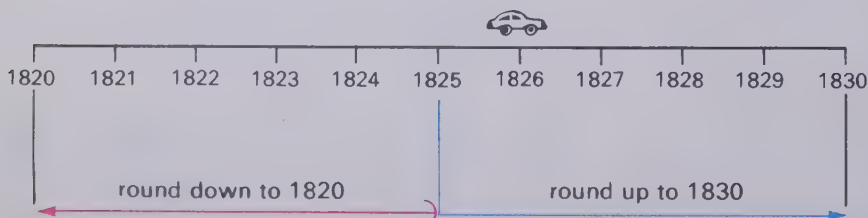


"The car has traveled about 1800 km"
is closer to being correct.

1826 rounded to
the nearest hundred
is 1800.

The car has traveled about 1820 km.

The car has traveled about 1830 km.



"The car has traveled about 1830 km"
is closer to being correct.

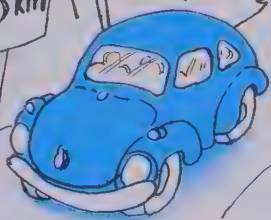
1826 rounded to
the nearest ten
is 1830.

85 is halfway between 80 and 90.

85 rounded to the nearest ten is 90.

When a number is halfway between two other numbers, round it to the greater number.

HOPE 85km



Round to the nearest ten.

11. 22 12. 198

Round to the nearest hundred.

13. 452 14. 1011

Round to the nearest thousand.

15. 3384 16. 4500

Exercises

Round to the nearest ten.

1. 64 2. 75 3. 41 4. 117 5. 255 6. 439

Round to the nearest hundred.

7. 813 8. 1684 9. 901 10. 250 11. 3449 12. 2550

Round to the nearest thousand.

13. 9400 14. 4300 15. 1629 16. 5500 17. 7236 18. 2910

Copy and round each of these

19.	to the nearest	\$2915	\$7350	\$1479	\$3547	\$2495	\$4048
	ten						
	hundred						
	thousand						

Working Together

Which digit is best for the ?

- 22 is between 20 and 0.
- 645 is between 60 and 650.
- 452 is between 400 and 00.
- 1350 is between 100 and 1400.
- 3384 is between 3000 and 000.
- 8707 is between 000 and 9000.

Answer these questions.

- Is 22 closer to 20 or to 30?
- Is 452 closer to 400 or to 500?
- Is 3384 closer to 3000 or to 4000?
- Is \$1350 closer to \$1300 or to \$1400?

Ordinal Numbers

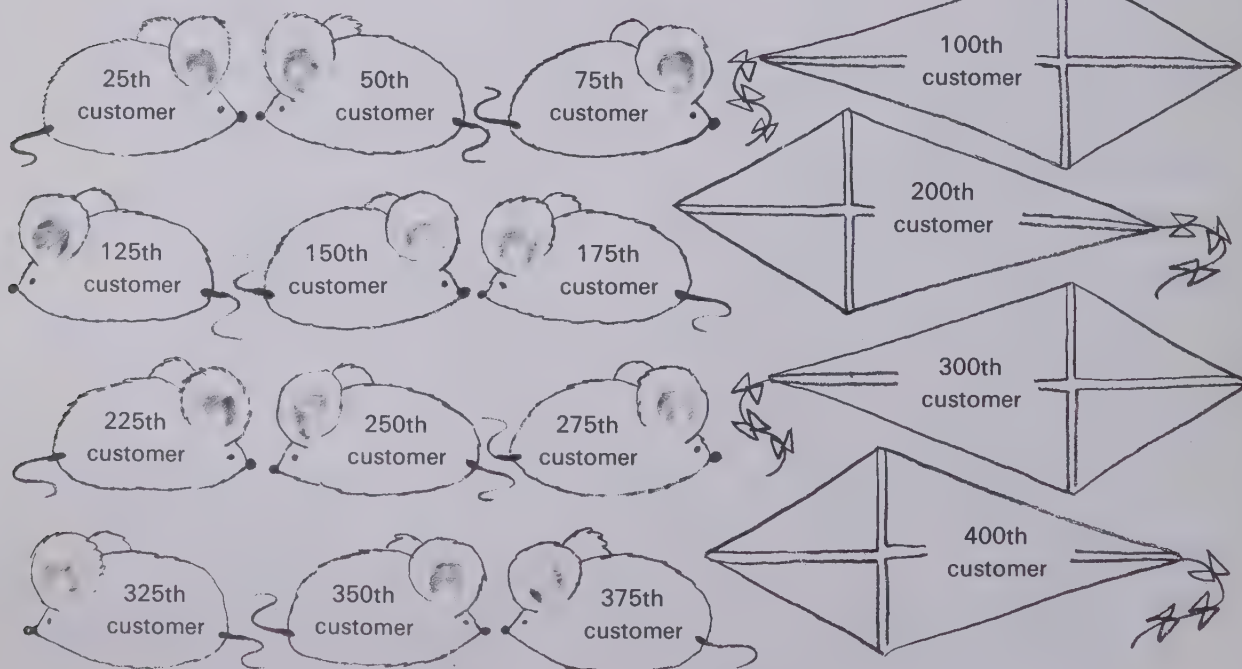
GRAND OPENING!

Prize for every twenty-fifth (25th) customer
Special prize for every one-hundredth (100th) customer



A toy mouse was the prize for every twenty-fifth customer.

A kite was the prize for every one-hundredth customer.



Working Together

Who comes after

1. the ninety-ninth customer?
2. the 200th customer?
3. the 323rd customer?
4. the 611th customer?

Exercises

List these in order.

1. 415th, 411th, 410th, 417th, 419th, 420th, 412th, 414th, 416th, 418th, 413th, 409th
2. 299th, 308th, 304th, 302nd, 307th, 301st, 309th, 306th, 303rd, 305th, 300th, 310th

Write using numerals.

3. five hundredth
4. two hundred twentieth

Write the words.

5. 135th
6. 403rd
7. 522nd
8. 391st

At the Grand Opening, what did

9. the 250th customer win?
10. the 700th customer win?
11. the 525th customer win?

Who won

12. the 3rd prize to be awarded?
13. the 4th prize to be awarded?
14. the 10th prize to be awarded?
- *15. the 21st prize to be awarded?
- *16. the 32nd prize to be awarded?

Who comes before

5. the 500th customer?
6. the two hundred third customer?
7. the 404th customer?
8. the 320th customer?

Guess:

Which of these letters


A, E, N, O, T

is used most often?

Test your guess:

Choose any story in a newspaper or any page in a book. In a chart like this

A	E	N	O	T
///	///			



tally the number of times each letter appears in the story or on the page.

Count your tallies. Compare the results with your guess.

Make a graph to show your results.

**PROBLEM
SOLVING**

Numbers to 999 999

When the moon is closest to the earth, the distance between them is 354 341 km.



In a six-digit numeral, the first three digits from the left show the number of thousands.

hundreds tens ones					
thousands			hundreds	tens	ones
3	5	4	3	4	1

The closest the moon comes to the earth is *354 thousand 341 km.*

The distance across the earth is 12 672 km.

hundreds tens ones					
thousands			hundreds	tens	ones
1	2		6	7	2

In a five-digit numeral, the first two digits from the left show the number of thousands.

12 thousand 672 km

This chart shows the value of each place in a six-digit numeral.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
distance to the moon →	3	5	4	3	4	1
distance across the earth →		1	2	6	7	2

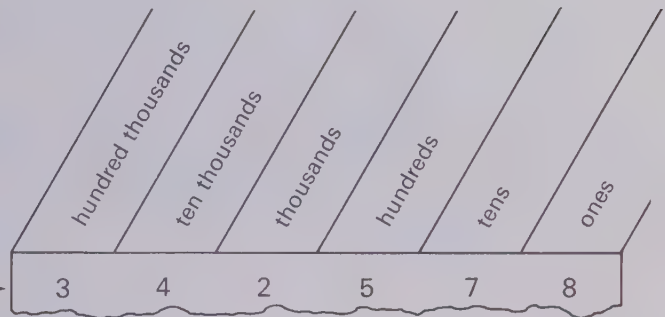
In expanded form $354\,341 = 300\,000 + 50\,000 + 4\,000 + 300 + 40 + 1$

Working Together

Leave a space after the thousands.

Copy and complete.

1.	475 thousand 354	475 354
2.	62 thousand	?
3.	225 ? 675	225 675
4.	? thousand ?	504 370



Use the place-value chart to help you answer these questions.

Example: The 4 in 342 578 means 40 000.

- What does the 6 mean in 645 207?
- What does each digit mean in 802 914?

Write the expanded form.

- 725 348
- 106 309

Write the standard form.

- $400\,000 + 30\,000 + 200 + 1$

Exercises

Write the standard form.

- 92 thousand 652
- 461 thousand 254
- fifty-five thousand nine hundred
- eight hundred twenty thousand
- two hundred six thousand five
- one hundred thousand twelve
- $600\,000 + 70\,000 + 30 + 6$
- $50\,000 + 300 + 20 + 7$
- $300\,000 + 9\,000 + 800 + 40$
- $100\,000 + 1\,000 + 100 + 1$

Write the words.

- 123 456
- 732 056
- 390 200
- 202 020

Write the expanded form.

- 625 378
- 902 517
- 56 001
- 303 030

What does the 5 mean in each numeral?

- 123 456
- 561 234
- 612 345
- 456 123
- 234 561
- 345 612

Comparing and Ordering Numbers

Which city has more people,
Saskatoon or Kitchener?



132 291 shows 132 thousands.

130 866 shows 130 thousands.

132 is greater than 130, so

132 291 is greater than 130 866.

$132 > 130$, so
 $132\,291 > 130\,866$

The cities are listed here
in order, from those with
the most people to those
with the fewest people.

Saskatoon	132 291
Kitchener	130 866
St. Catharines	121 657
Longueuil	119 994
Halifax	113 036
Thunder Bay	110 288

Saskatoon has more people than Kitchener.

Working Together

In which place, from left to right, are the digits first different?

- | | | | |
|----|--|----|--|
| 1. | <div style="border: 1px solid black; padding: 5px; display: inline-block;">721 574
721 642</div> | 2. | <div style="border: 1px solid black; padding: 5px; display: inline-block;">814 693
835 019</div> |
|----|--|----|--|

List from greatest to least.

- | | |
|----|--|
| 5. | <div style="border: 1px solid black; padding: 5px; display: inline-block;">243 913 300 744 341 903
143 913 43 913</div> |
|----|--|

Which is greater,

3. 525 236 or 625 206?
4. 927 344 or 928 314?

List from least to greatest.

- | | |
|----|--|
| 6. | <div style="border: 1px solid black; padding: 5px; display: inline-block;">926 141 926 211 100 976
92 649 696 517</div> |
|----|--|

Exercises

Which city in each pair has more people? Use $>$ or $<$ to compare the numbers.

Example: $82\,976 < 84\,994$,
so Saint John has fewer people than St. John's.

1.	Saint John	82 976	St. John's	84 994
2.	Calgary	457 828	Edmonton	452 095
3.	Québec	173 959	Windsor	192 683
4.	Chilliwack	8 472	Flin Flon	8 431
5.	Mississauga	246 766	Laval	241 297
6.	Whitehorse	13 045	Charlottetown	16 508
7.	Winnipeg	553 148	Hull	58 160
8.	Moose Jaw	31 884	Medicine Hat	32 263

List from greatest to least.

- | | |
|----|--|
| 9. | <div style="border: 1px solid black; padding: 5px; display: inline-block;">385 544 389 544 33 999
305 544 309 544</div> |
|----|--|

List from least to greatest.

- | | |
|-----|---|
| 10. | <div style="border: 1px solid black; padding: 5px; display: inline-block;">940 726 944 276 939 939
799 000 940 727</div> |
|-----|---|

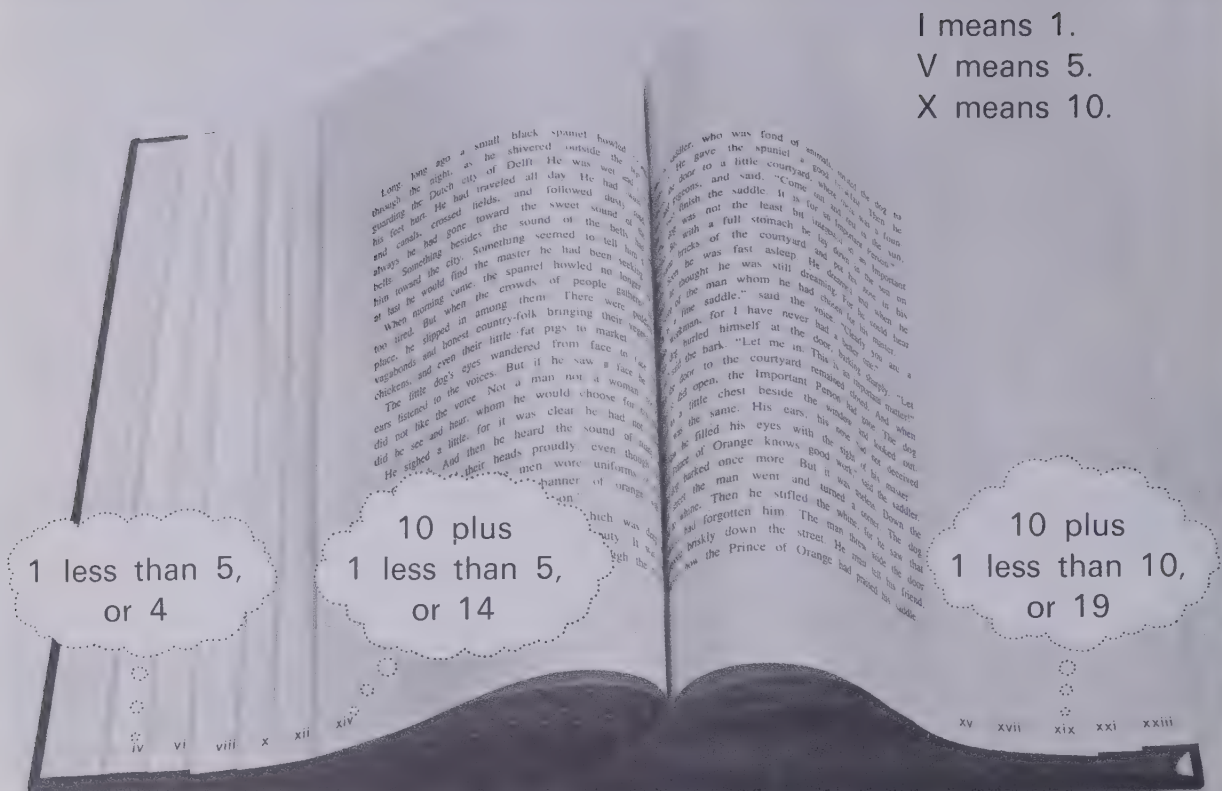
Show

*11. the greatest number that can be named with six different digits.

*12. the least number that can be named with six different digits.

Roman Numerals

The pages at the front of a book may be numbered with **Roman numerals**.



I means 1.
V means 5.
X means 10.

Working Together

Choose one numeral from each table to make Roman numerals.

Example: $84 = \underbrace{\text{LXXX}}_{80} \text{IV}_4$

1. 56 2. 94 3. 39

Draw a square around the tens.

Draw a circle around the ones.

Write the standard form for each.

Example: $\boxed{\text{X}} \boxed{\text{X}} \text{I} \text{X} = 29$

4. XLIV 5. LXXXIX 6. XCVIII

Numerals for multiples of 10

10 = X
20 = XX
30 = XXX
40 = XL
50 = L
60 = LX
70 = LXX
80 = LXXX
90 = XC
100 = C

Numerals for 1 to 9

1 = I
2 = II
3 = III
4 = IV
5 = V
6 = VI
7 = VII
8 = VIII
9 = IX

Exercises

Write the standard form for each.

1. X
2. VIII
3. XVI
4. XXXVII
5. XXIV
6. XL
7. XIX
8. LIV
9. XCI
10. LXII
11. LXXIII
12. XLVIII

Write the Roman numerals.

13. 2
14. 8
15. 70
16. 26
17. 19
18. 34
19. 51
20. 100
21. 85
22. 96
23. 47
24. 63

Complete the patterns.

25. V, X, XV, , , 

27. VI, XVI, XXVI, , , 

29. IV, IX, XIV, , , 

31. XI, XXII, XXXIII, , , 

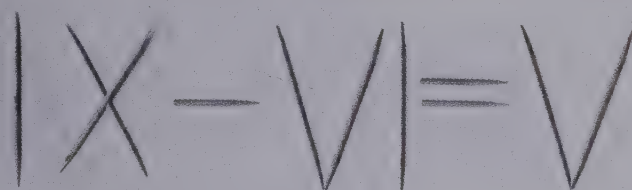
26. X, XX, XXX, , , 

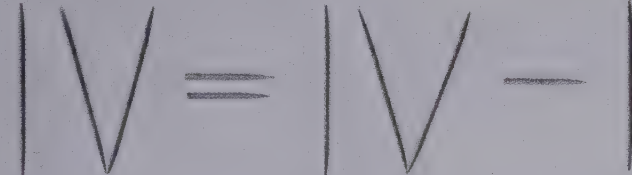
28. IV, XIV, XXIV, , , 

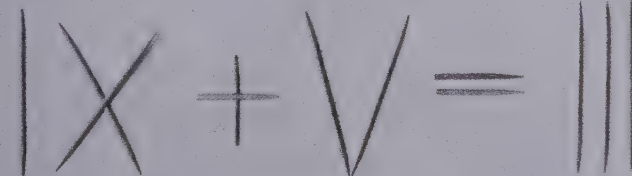
30. II, IV, VI, , , 


*32. LV, LXVI, LXXVII, , , 

Use toothpicks to make these number sentences. Then show how to turn each sentence into a true statement by moving one toothpick.

1. 

2. 

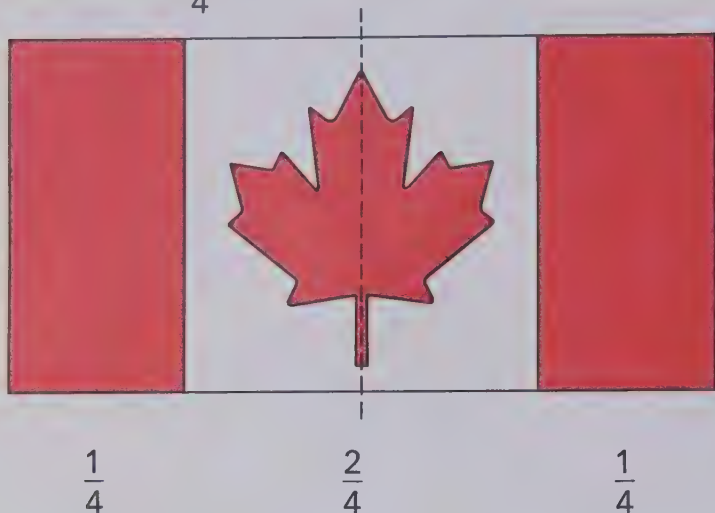
3. 

4. 

**try
this**

Fractions for Part of a Whole

Each red bar makes up one-fourth ($\frac{1}{4}$) of Canada's flag.



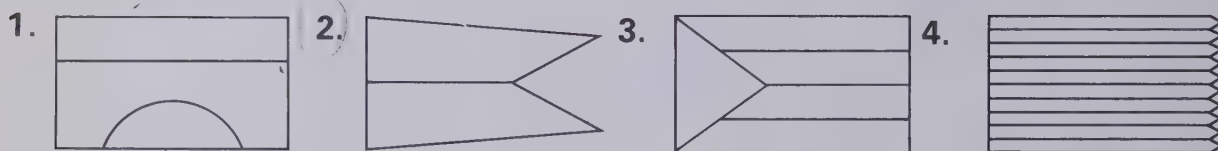
Each red bar can be thought of as 1 of 4 equal parts.

The dotted line helps show four equal parts. The white part with the maple leaf makes up $\frac{2}{4}$ (two-fourths) of Canada's flag.

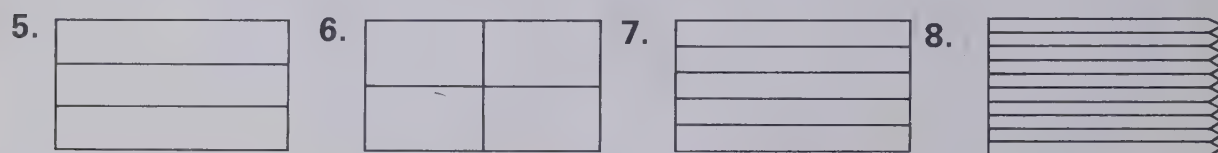
$\frac{1}{4}$ and $\frac{2}{4}$ are **fractions**. Fractions name amounts less than 1.

Working Together

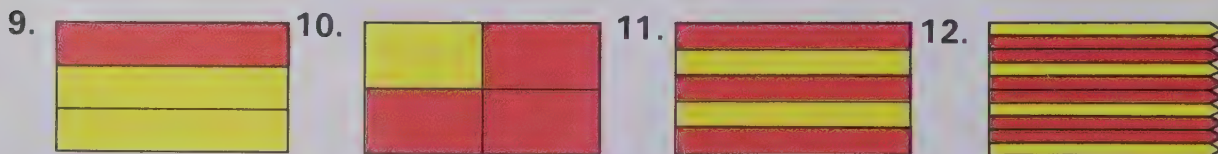
Which flags show equal parts?



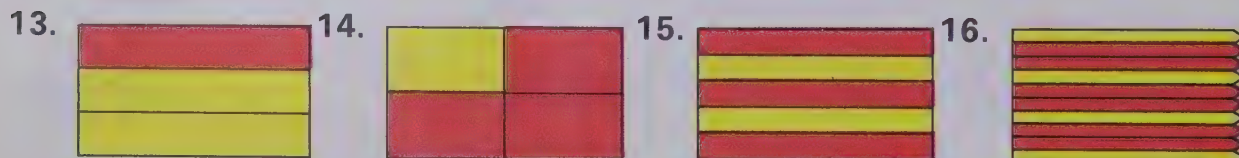
How many equal parts in each of these?



How many of the equal parts are red?



Give the fraction that shows how much is red.

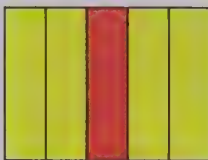


Exercises

Write fractions to complete the chart.

	red part	yellow part
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

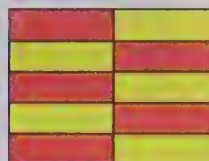
1.



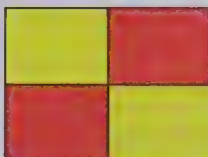
2.



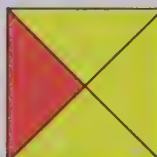
3.



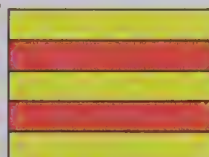
4.



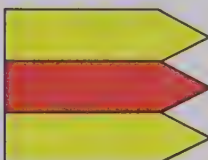
5.



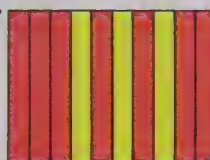
6.



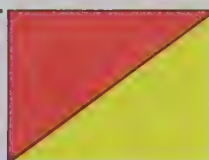
7.



8.



9.



Draw and color flags to show these fractions.

Try to make flags different from those shown above.

10. $\frac{2}{3}$

11. $\frac{1}{2}$

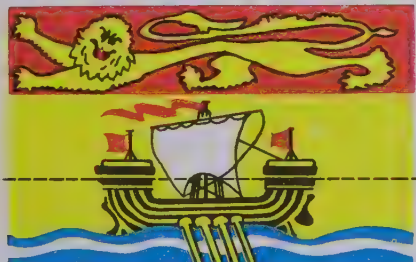
12. $\frac{4}{10}$

13. $\frac{3}{4}$

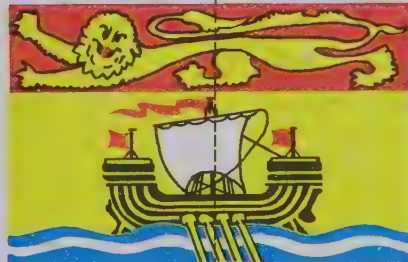
14. $\frac{5}{10}$

15. $\frac{2}{5}$

The flag for New Brunswick suggests the fractions $\frac{1}{3}$ and $\frac{2}{3}$.



Imagine a line through the ship's mast and it also suggests $\frac{1}{2}$.



Look at the flag for another province.

- Does its design suggest any fraction?

Look at other flags.

- Do their designs suggest any fractions?

**try
this**

Fractions for Part of a Set

Here are the flags of the 10 provinces of Canada.



Alberta



British Columbia



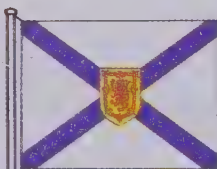
Manitoba



New Brunswick



Newfoundland



Nova Scotia



Ontario



Prince Edward Island



Quebec



Saskatchewan

What fraction tells how many of the flags show an animal?

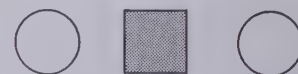
4 flags show a lion.
1 flag shows a bison.

5 of the 10 flags show an animal.

$\frac{5}{10}$ of the flags show an animal.

Working Together

1. How many shapes are there?





2. How many are squares?

3. What fraction tells how many of the shapes are squares?

4. What fraction tells how many of the 4 squares are shaded?

Exercises

Write a fraction to answer each question about the set of 10 provincial flags.

1. How many flags show red?
2. How many flags show blue?
3. How many show green?
4. How many show white?
5. How many show yellow or gold?
6. How many show a shield?
7. How many show a lion?
8. How many show a bison?
9. How many show a plant?
10. How many show a ship?
11. How many flags contain this design? 
12. How many flags contain this design? 

There are 5 flags showing animals.
What fraction tells how many of these

13. show a lion?
14. show a bison?

These 4 provinces
are known as
Atlantic Canada.

New Brunswick	Newfoundland
Nova Scotia	Prince Edward Island

What fraction of the flags of Atlantic Canada

15. show blue?
16. show a plant?
17. suggest the sea?




These 3 provinces
are known as the
Prairie Provinces.

Alberta	Manitoba
Saskatchewan	

What fraction of the flags of the Prairie Provinces

18. show white?
19. show a flower?
20. suggest the prairies?

Draw and color pictures for each of these.

21. 5 flags, $\frac{1}{5}$ showing blue, $\frac{4}{5}$ showing red
22. 4 flags, $\frac{2}{4}$ showing , $\frac{2}{4}$ showing 
23. 3 flags, $\frac{2}{3}$ showing a flower, $\frac{1}{3}$ showing an animal
- *24. 10 flags, $\frac{3}{10}$ showing yellow, $\frac{4}{10}$ showing white
- *25. 5 flags, $\frac{3}{5}$ showing green, $\frac{4}{5}$ showing a flower
- *26. 10 flags, $\frac{2}{10}$ showing , $\frac{5}{10}$ showing blue, $\frac{7}{10}$ showing just two colors

Fractions Greater Than 1

4 tires make up a set. How many sets of tires are in front of the garage?



2 sets of tires

There are $2\frac{3}{4}$ sets of tires in front of the garage.

3 of 4 tires of another set

two and three-fourths sets of tires

Exercises

Write fractions to answer the following questions.

4 tires to a set. How many sets of tires?

1.

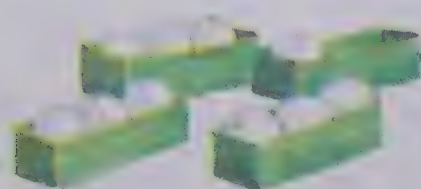


2.



3 golf balls to a box. How many boxes of golf balls?

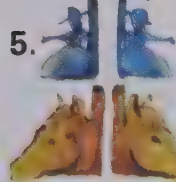
3.



4.



2 bookends to each pair.
How many pairs?



6.



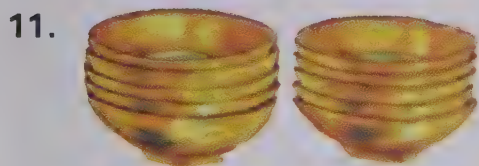
10 crayons to each box.
How many boxes of crayons?



10.



5 bowls in each stack.
How many stacks of bowls?



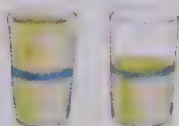
12.



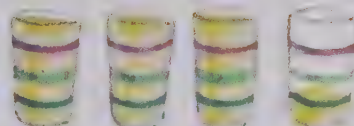
How many glasses of juice?



14.



15.



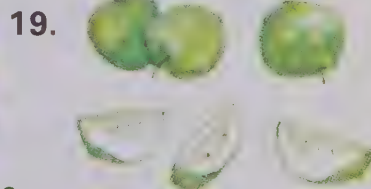
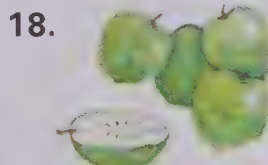
How many pairs of skates?



17.



How many apples?



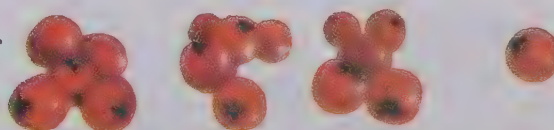
4 eggs for each cake.
How many cakes can be made?

* 23.



5 tomatoes for each carton.
How many cartons are needed?

* 24.



Draw a picture
to show each amount.

20. $2\frac{3}{4}$ doughnuts

21. $3\frac{1}{2}$ cookies

22. $4\frac{1}{3}$ stacks with
3 blocks in each stack

More Information Needed

Sometimes more information is needed to solve a problem.

Mother said that you are to go to the store and get the things for the picnic.



What else do you need to know when you hear these statements?

1. Get milk from the milk machine.
3. You and the others will mow the lawn.
5. Find a place where I can set this box.
7. Get some new shoelaces.
9. Don't be late.
11. Want to go to the movie?
13. Where shall we eat lunch?

bread?

meat?

ketchup?

soda pop?

chips?

What picnic?

When?

How many will be there?

Where?

charcoal?

What store?

How much can I spend?



2. How will you spend your money at the fair?
4. Get something with which we can wrap the package.
6. Bring what you will need for the park.
8. You can watch TV when you finish your schoolwork.
10. Be sure to pick up some paper for school.
12. Is there enough room?
14. Watch out!

**PROBLEM
SOLVING**

Checking Up

Think of a place-value chart to help you answer these questions.

1. What does the 8 mean in 658 923?
2. What does the 9 mean in 97 573?
3. What does the 7 mean in 724 195?
4. What does the 0 mean in 204 157?

Write the standard form.

5. six hundred ninety-two thousand three hundred seventy-one
6. three hundred six thousand
7. fifty-four thousand thirty-two
8. $300\,000 + 2\,000 + 50 + 7$
9. 235 thousand 308
10. 2 thousands 4 hundreds 7 tens
11. LXXIV

Write the expanded form.

12. 37 508
13. 405 095

Write the words.

14. 83 881
15. 602 019

Use $>$ or $<$ to make true statements.

16. $44\,172 \bigcirc 441\,472$
17. $323\,419 \bigcirc 303\,499$
18. $385\,756 \bigcirc 385\,753$

List the numbers from greatest to least.

19. 324 425, 324 254, 325 452, 34 452, 342 542, 324 252

Round to the nearest ten.

20. 27
21. 633

Round to the nearest hundred.

22. 748
23. 2992

Round to the nearest thousand.

24. 2499
25. 3501

Answer the question.

26. What is the first word on the 200th page of this book?

Write the fraction that shows

27. how much pie is left.



29. how many boxes of golf balls there are.



28. how many are squares.



30. how much is shaded.



2 ADDITION

Basic Facts

There are 6 large rabbits.
There are 7 small rabbits.
How many rabbits
are there in all?



Add 6 and 7.

$$\begin{array}{r} 6 \\ 7 \\ \hline 13 \end{array}$$

$$6 + 7 = 13$$

$$\begin{array}{r} 7 \\ 6 \\ \hline 13 \end{array}$$

$$7 + 6 = 13$$

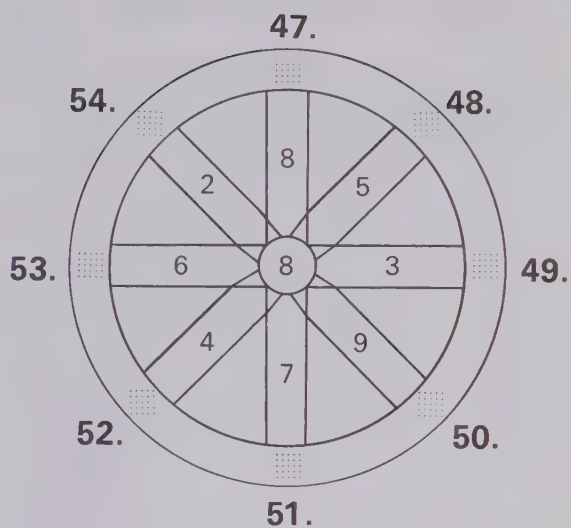
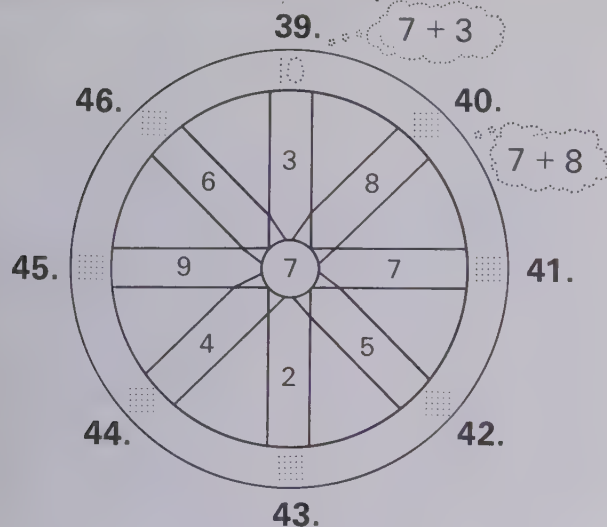
There are 13 rabbits in all.

Exercises

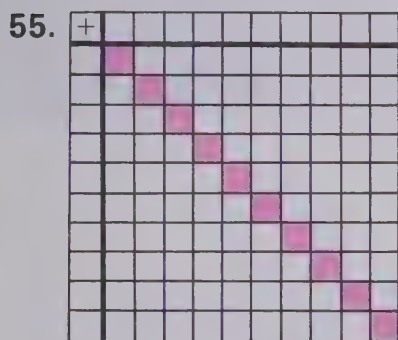
Add.

- | | | | | |
|---|---|---|---|---|
| 1. $5 + 4$ | 2. $8 + 3$ | 3. $2 + 7$ | 4. $5 + 6$ | 5. $8 + 7$ |
| 6. $2 + 1$ | 7. $0 + 5$ | 8. $9 + 9$ | 9. $1 + 6$ | 10. $3 + 2$ |
| 11. $4 + 2$ | 12. $6 + 7$ | 13. $8 + 0$ | 14. $9 + 8$ | 15. $8 + 6$ |
| 16. $8 + 5$ | 17. $4 + 7$ | 18. $9 + 0$ | 19. $4 + 3$ | 20. $2 + 9$ |
| 21. $\begin{array}{r} 9 \\ 4 \\ \hline \end{array}$ | 22. $\begin{array}{r} 3 \\ 6 \\ \hline \end{array}$ | 23. $\begin{array}{r} 7 \\ 7 \\ \hline \end{array}$ | 24. $\begin{array}{r} 0 \\ 4 \\ \hline \end{array}$ | 25. $\begin{array}{r} 6 \\ 9 \\ \hline \end{array}$ |
| 26. $\begin{array}{r} 4 \\ 8 \\ \hline \end{array}$ | 27. $\begin{array}{r} 8 \\ 9 \\ \hline \end{array}$ | 28. $\begin{array}{r} 8 \\ 4 \\ \hline \end{array}$ | 29. $\begin{array}{r} 9 \\ 5 \\ \hline \end{array}$ | 30. $\begin{array}{r} 5 \\ 5 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} 5 \\ 1 \\ \hline \end{array}$ | 32. $\begin{array}{r} 6 \\ 8 \\ \hline \end{array}$ | 33. $\begin{array}{r} 5 \\ 7 \\ \hline \end{array}$ | 34. $\begin{array}{r} 7 \\ 3 \\ \hline \end{array}$ | 35. $\begin{array}{r} 6 \\ 4 \\ \hline \end{array}$ |
| 36. $\begin{array}{r} 6 \\ 6 \\ \hline \end{array}$ | 37. $\begin{array}{r} 5 \\ 3 \\ \hline \end{array}$ | 38. $\begin{array}{r} 3 \\ 9 \\ \hline \end{array}$ | | |

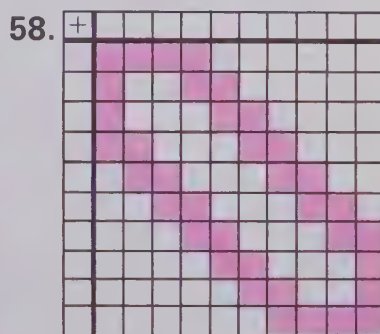
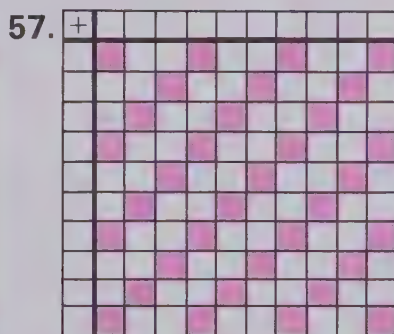
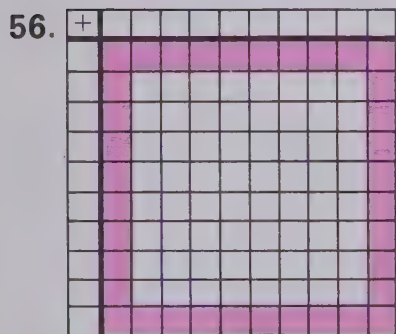
Write the sums that complete each wheel.



Use grid paper. Set up four addition tables like this. Fill in the sums to match these patterns.



+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										

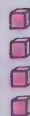
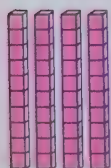


59. Make up and color your own pattern in an addition table. Give it to a friend.

Addition, Regrouping Ones

Lee filled 26 baskets with potatoes.
Ray filled 18 baskets with potatoes.
How many baskets did they fill?

Add 26 and 18.



tens	ones
2	6
1	8
<hr/>	
	4

Show the **addends**,
26 and 18, in
vertical form.

Add the ones.

1	
2	6
1	8
<hr/>	
	4

Regroup 14 ones as
1 ten and 4 ones.
Show the 1 ten
lined up with
the other tens.

1	
2	6
1	8
<hr/>	
4	4

Add the tens.



Lee and Ray filled 44 baskets with potatoes.



Working Together

Regroup the ones.

1. 13 ones = $\begin{array}{|c|c|c|c|c|} \hline \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \end{array}$ ten $\begin{array}{|c|c|c|c|c|} \hline \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \end{array}$ ones

2. 15 ones = $\begin{array}{|c|c|c|c|c|} \hline \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \end{array}$ ten $\begin{array}{|c|c|c|c|c|} \hline \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \end{array}$ ones

Regroup the ones and complete the addition.

3.
$$\begin{array}{r} 38 \\ 55 \\ \hline 13 \end{array}$$

4.
$$\begin{array}{r} 16 \\ 29 \\ \hline 15 \end{array}$$

Add.

5.
$$\begin{array}{r} 47 \\ 29 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 74 \\ 13 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 48 \\ 39 \\ \hline \end{array}$$

Exercises

Add.

1. $57 + 37$

2. $24 + 75$

3. $26 + 47$

4. $43 + 16$

5. $58 + 27$

6. $23 + 58$

7.
$$\begin{array}{r} 39 \\ 27 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 38 \\ 46 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 61 \\ 23 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 15 \\ 39 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 59 \\ 18 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 45 \\ 48 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 42 \\ 19 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 28 \\ 28 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 18 \\ 61 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 27 \\ 35 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 32 \\ 18 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 17 \\ 64 \\ \hline \end{array}$$

Solve.

19. 47 potatoes in Lee's basket. 46 potatoes in Ray's basket. How many potatoes in both baskets?
20. 18 potatoes from one hill. 14 from another hill. How many potatoes from both hills?
21. 36 potato hills in one row. 35 in another row. How many hills in both rows?
22. 24 rows of potatoes in one field. 38 rows of potatoes in another. How many rows of potatoes in both fields?
23. The boys sold a small sack of potatoes for 39¢. They sold a larger sack for 56¢. How much did they get for both sacks?

Practice



Solve.

1. 28 red peppers.
27 green peppers.
How many peppers?
2. 45 green squash.
38 yellow squash.
How many squash?
3. 26 white onions.
58 red onions.
How many onions?
4. 54 green cabbages.
39 red cabbages.
How many cabbages?
5. 18 baskets of apples.
23 baskets of pears.
How many baskets of fruit?
6. \$37 for fresh vegetables.
\$29 for fresh fruit.
How much money for both?

Add.

- | | | | | |
|---|---|---|---|---|
| 7. $8 + 9$ | 8. $49 + 28$ | 9. $48 + 45$ | 10. $8 + 3$ | 11. $\$68 + \23 |
| 12. $5 + 66$ | 13. $9 + 6$ | 14. $19 + 76$ | 15. $37 + 57$ | 16. $\$26 + \33 |
| 17. $5 + 4$ | 18. $45 + 24$ | 19. $5 + 8$ | 20. $55 + 18$ | 21. $\$7 + \6 |
| 22. $\begin{array}{r} 37 \\ 56 \\ \hline \end{array}$ | 23. $\begin{array}{r} 29 \\ 7 \\ \hline \end{array}$ | 24. $\begin{array}{r} 6 \\ 8 \\ \hline \end{array}$ | 25. $\begin{array}{r} 36 \\ 38 \\ \hline \end{array}$ | 26. $\begin{array}{r} 8 \\ 21 \\ \hline \end{array}$ |
| 27. $\begin{array}{r} 46 \\ 9 \\ \hline \end{array}$ | 28. $\begin{array}{r} 7 \\ 2 \\ \hline \end{array}$ | 29. $\begin{array}{r} 52 \\ 47 \\ \hline \end{array}$ | 30. $\begin{array}{r} 36 \\ 11 \\ \hline \end{array}$ | 31. $\begin{array}{r} 76 \\ 15 \\ \hline \end{array}$ |
| 32. $\begin{array}{r} 27 \\ 25 \\ \hline \end{array}$ | 33. $\begin{array}{r} \$14 \\ 58 \\ \hline \end{array}$ | | | |

Copy and complete this puzzle.

Across

Down

a. $37 + 48$

a. $26 + 57$

c. $74 + 5$

b. $40 + 19$

e. $23 + 16$

c. $38 + 38$

f. $36 + 24$

d. $22 + 68$

i. $17 + 39$

g. $19 + 46$

k. $39 + 9$

h. $59 + 15$

l. $19 + 63$

j. $23 + 45$

a	b		c	d
e			f	
		g		
h		i	j	
k			l	

1. Replace the letters \rightarrow $\begin{array}{r} P \\ E \\ A \end{array}$ with three different digits to make an addition fact.

2. Can you find other groups of three different digits that replace P, E, A and give other addition facts?

3. Can three of these \rightarrow replace P, E, A and give an addition fact?

one-digit
even numbers
0, 2, 4,
6, 8

4. Can three of these \rightarrow replace P, E, A and give an addition fact?

one-digit
odd numbers
1, 3, 5,
7, 9

5. Replace the letters with six different digits to make a true addition statement.

$\begin{array}{r} R A \\ D I \\ S H \end{array}$

6. Can you find other groups of six different digits that replace R,A,D,I,S,H and give other true addition statements?

7. Replace the letters E,P,R with *three* different digits to make a true addition statement.

$\begin{array}{r} P E \\ P P \\ E R \end{array}$

8. Make up another problem for a friend. Use some letters more than once in the problem.

try
this

Addition, Regrouping Ones, Tens, or Hundreds

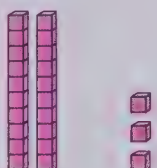
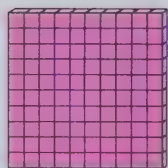
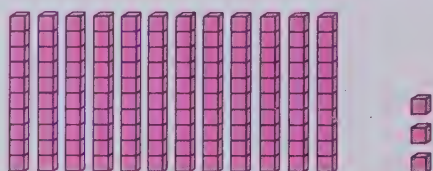
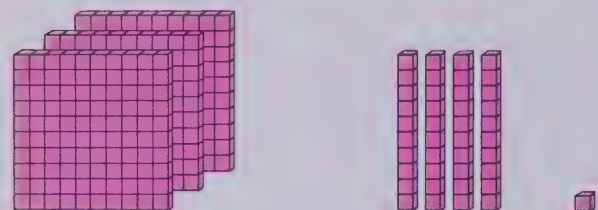
The ranchers sold 282 cattle from one roundup and 341 cattle from another. How many cattle were sold in all?

Add 282 and 341.



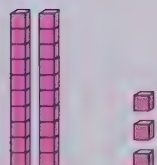
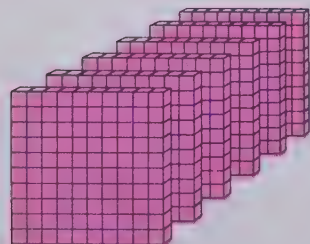
hundreds	tens	ones
2	8	2
3	4	1
<hr/>		
	2	3

Add the ones.
Then add the tens.



			1
2	8	2	
3	4	1	
<hr/>			
	2	3	

Regroup 12 tens as
1 hundred and 2 tens.
Show the 1 hundred
lined up with
the other hundreds.



			1
2	8	2	
3	4	1	
<hr/>			
6	2	3	

Add the hundreds.

There were 623 cattle sold.



Working Together

Regroup.

- 18 ones = $\boxed{\text{1}} \boxed{\text{8}}$ ten $\boxed{\text{1}}$ ones
- 12 tens = $\boxed{\text{1}}$ hundred $\boxed{\text{2}}$ tens
- 17 hundreds = $\boxed{\text{1}}$ thousand $\boxed{\text{7}}$ hundreds

Regroup and complete each addition.

$$\begin{array}{r} 4. \quad 653 \\ \quad 91 \\ \hline \quad 44 \end{array}$$

$$\begin{array}{r} 5. \quad 2543 \\ \quad 1815 \\ \hline \quad 358 \end{array}$$

$$\begin{array}{r} 6. \quad 7618 \\ \quad 378 \\ \hline \quad 6 \end{array}$$

$$\begin{array}{r} 7. \quad 4002 \\ \quad 1608 \\ \hline \quad 0 \end{array}$$

Add.

$$\begin{array}{r} 8. \quad 744 \\ \quad 237 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 1608 \\ \quad 1720 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 943 \\ \quad 4226 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 6081 \\ \quad 358 \\ \hline \end{array}$$

Exercises

Add. The sums can help you find the answer to the riddle.

$$\begin{array}{r} \text{A} \quad 346 \\ \quad 291 \\ \hline \end{array}$$

$$\begin{array}{r} \text{C} \quad 267 \\ \quad 28 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D} \quad 4458 \\ \quad 2270 \\ \hline \end{array}$$

$$\begin{array}{r} \text{E} \quad 3604 \\ \quad 485 \\ \hline \end{array}$$

$$\begin{array}{r} \text{G} \quad 2639 \\ \quad 2244 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H} \quad 3494 \\ \quad 73 \\ \hline \end{array}$$

$$\begin{array}{r} \text{I} \quad 1745 \\ \quad 923 \\ \hline \end{array}$$

$$\begin{array}{r} \text{L} \quad 548 \\ \quad 1349 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M} \quad 1883 \\ \quad 2416 \\ \hline \end{array}$$

$$\begin{array}{r} \text{N} \quad 164 \\ \quad 228 \\ \hline \end{array}$$

$$\begin{array}{r} \text{O} \quad 2506 \\ \quad 307 \\ \hline \end{array}$$

$$\begin{array}{r} \text{P} \quad 78 \\ \quad 551 \\ \hline \end{array}$$

$$\begin{array}{r} \text{R} \quad 2630 \\ \quad 1189 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T} \quad 945 \\ \quad 642 \\ \hline \end{array}$$

$$\begin{array}{r} \text{U} \quad 234 \\ \quad 1595 \\ \hline \end{array}$$

$$\begin{array}{r} \text{W} \quad 244 \\ \quad 935 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Y} \quad 2837 \\ \quad 4231 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Z} \quad 5123 \\ \quad 537 \\ \hline \end{array}$$

Riddle: How are cattle and the numbers 25 and 35 alike?

They are 3819 2813 1829 392 6728 4089 6728 1829 629.

Addition, Two or More Regroupings

The pigs ate 2487 kg (kilograms) of feed in three months. The turkeys ate 1796 kg of feed. How much feed was eaten by the pigs and turkeys?

Add 2487 and 1796.

Add ones and regroup.

$$\begin{array}{r} \\ 2487 \\ + 1796 \\ \hline 3 \end{array}$$

Add tens and regroup.

$$\begin{array}{r} \\ 2487 \\ + 1796 \\ \hline 83 \end{array}$$

Add hundreds and regroup.

$$\begin{array}{r} \\ 2487 \\ + 1796 \\ \hline 283 \end{array}$$

Add thousands.

$$\begin{array}{r} \\ 2487 \\ + 1796 \\ \hline 4283 \end{array}$$

The pigs and turkeys ate 4283 kg of feed.



Working Together

Add by following the steps.

1.

$$\begin{array}{r} 258 \\ + 397 \\ \hline \end{array}$$

Add ones and regroup. _____

Add tens and regroup. _____

Add hundreds. _____

2.

$$\begin{array}{r} 3617 \\ + 643 \\ \hline \end{array}$$

Add ones and regroup. _____

Add tens. _____

Add hundreds and regroup. _____

Add thousands. _____



Exercises

Many of these are not correct.
Copy each exercise that
contains an error. Ring the
column that has the error.
Then add correctly.

Example: Incorrect

$$\begin{array}{r} 2473 \\ 1628 \\ 4001 \\ \hline \end{array}$$

Correct

$$\begin{array}{r} 2473 \\ 1628 \\ 4101 \\ \hline \end{array}$$

1. $\begin{array}{r} 305 \\ 2976 \\ \hline 3271 \end{array}$	2. $\begin{array}{r} 3146 \\ 5978 \\ \hline 8124 \end{array}$	3. $\begin{array}{r} 789 \\ 856 \\ \hline 1645 \end{array}$
--	---	---

4. $\begin{array}{r} 3452 \\ 3877 \\ \hline 7339 \end{array}$	5. $\begin{array}{r} 5674 \\ 2049 \\ \hline 7713 \end{array}$	6. $\begin{array}{r} 476 \\ 6653 \\ \hline 7129 \end{array}$
---	---	--

7. $\begin{array}{r} 4803 \\ 3907 \\ \hline 8700 \end{array}$	8. $\begin{array}{r} 8681 \\ 729 \\ \hline 9310 \end{array}$	9. $\begin{array}{r} 2254 \\ 1646 \\ \hline 4000 \end{array}$
---	--	---

10. $\begin{array}{r} \$138 \\ 2462 \\ \hline \$3842 \end{array}$	11. $\begin{array}{r} \$3487 \\ 2518 \\ \hline \$6005 \end{array}$	12. $\begin{array}{r} \$4456 \\ 1199 \\ \hline 5555 \end{array}$
---	--	--

3. $\begin{array}{r} 3491 \\ 4536 \\ \hline \end{array}$

Add ones. _____

Add tens and regroup. _____

Add hundreds and regroup. _____

Add thousands. _____

4. $\begin{array}{r} 4853 \\ 2967 \\ \hline \end{array}$

Add ones and regroup. _____

Add tens and regroup. _____

Add hundreds and regroup. _____

Add thousands. _____

Add.

5. $\begin{array}{r} 3649 \\ 2437 \\ \hline \end{array}$	6. $\begin{array}{r} 350 \\ 678 \\ \hline \end{array}$	7. $\begin{array}{r} \$2619 \\ 589 \\ \hline \end{array}$
--	--	---

1. Replace the letters → $\begin{array}{r} PIG \\ MUD \\ JOY \end{array}$
with these nine
different digits
to make a true
addition statement.

1, 2, 3, 4, 5
6, 7, 8, 9

2. Now try it
using the digits
0, 1, 2, 3, 4,
5, 6, 7, 8.

**try
this**

Practice

Add.

- | | | | | |
|---|---|---|---|---|
| 1. $\begin{array}{r} 4856 \\ 326 \\ \hline \end{array}$ | 2. $\begin{array}{r} 3876 \\ 2594 \\ \hline \end{array}$ | 3. $\begin{array}{r} 994 \\ 2057 \\ \hline \end{array}$ | 4. $\begin{array}{r} 823 \\ 734 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$7306 \\ 1997 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 5083 \\ 2869 \\ \hline \end{array}$ | 7. $\begin{array}{r} 4351 \\ 772 \\ \hline \end{array}$ | 8. $\begin{array}{r} 4517 \\ 1556 \\ \hline \end{array}$ | 9. $\begin{array}{r} 7447 \\ 555 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$6031 \\ 909 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 3876 \\ 2943 \\ \hline \end{array}$ | 12. $\begin{array}{r} 952 \\ 297 \\ \hline \end{array}$ | 13. $\begin{array}{r} 2705 \\ 418 \\ \hline \end{array}$ | 14. $\begin{array}{r} 1933 \\ 6577 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$4864 \\ 4684 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 6178 \\ 2771 \\ \hline \end{array}$ | 17. $\begin{array}{r} 794 \\ 278 \\ \hline \end{array}$ | 18. $\begin{array}{r} 1695 \\ 4136 \\ \hline \end{array}$ | 19. $\begin{array}{r} 1863 \\ 491 \\ \hline \end{array}$ | 20. $\begin{array}{r} \$5410 \\ 3636 \\ \hline \end{array}$ |
| 21. $\begin{array}{r} 398 \\ 4568 \\ \hline \end{array}$ | 22. $\begin{array}{r} 4427 \\ 3953 \\ \hline \end{array}$ | 23. $\begin{array}{r} 363 \\ 358 \\ \hline \end{array}$ | 24. $\begin{array}{r} 5255 \\ 614 \\ \hline \end{array}$ | 25. $\begin{array}{r} \$3849 \\ 4229 \\ \hline \end{array}$ |

Would you rather have

- | | |
|---|---|
| *26. $\$2642 + \577 or
$\$2462 + \$775?$ | *27. $\$4463 + \1862 or
$\$3644 + \$2681?$ |
| *28. $\$50.25 + \5.53 or
$\$52.05 + \$3.55?$ | *29. $\$45.34 + \16.82 or
$\$34.54 + \$28.16?$ |
| *30. $\$17.12 + \8.94 or
$\$21.71 + \$4.98?$ | *31. $\$69.62 + \14.75 or
$\$26.96 + \$57.41?$ |

Here is a way to check addition.

$3876 \rightarrow 3 + 8 + 7 + 6 \rightarrow 24 \rightarrow 2 + 4 \rightarrow 6$	} ← If the sum of these two numbers does <i>not</i> equal this number, there is a mistake in your work.
$4934 \rightarrow 4 + 9 + 3 + 4 \rightarrow 20 \rightarrow 2 + 0 \rightarrow 2$	
$8810 \rightarrow 8 + 8 + 1 + 0 \rightarrow 17 \rightarrow 1 + 7 \rightarrow 8$	

**try
this**

Use this method to check
Exercises 16–25 on this page.

Copy. Then add across and down to complete each addition square.

32.

368	429	
762	558	

Add 368
and 429.

33.

2176	1735	
3849	482	

Add to match each letter with a number.
Then decode the message.

34.

+	666	777	888	999
1234	A	B	C	D
5678	E	F	I	K
1357	L	M	O	R
2468	S	T	U	V

D matches
 $1234 + 999$.



Oops!

			2011	6344			
2122	1900	2356	6344	6455	3356	2023	
	1900	3467	2245	6566	2233		
2134	6566	3134	3245	1900	6677	3134	6344

Adding Three Numbers

2560 bales were taken
from one field, 985
were taken from another,
and 4398 were taken
from a third field.

How many bales were
taken from the fields?

Add 2560, 985, and 4398.

Add ones
and regroup.

$$\begin{array}{r} 1 \\ 2560 \\ 985 \\ 4398 \\ \hline 3 \end{array}$$

Add tens
and regroup.

$$\begin{array}{r} 21 \\ 2560 \\ 985 \\ 4398 \\ \hline 43 \end{array}$$

Add hundreds
and regroup.

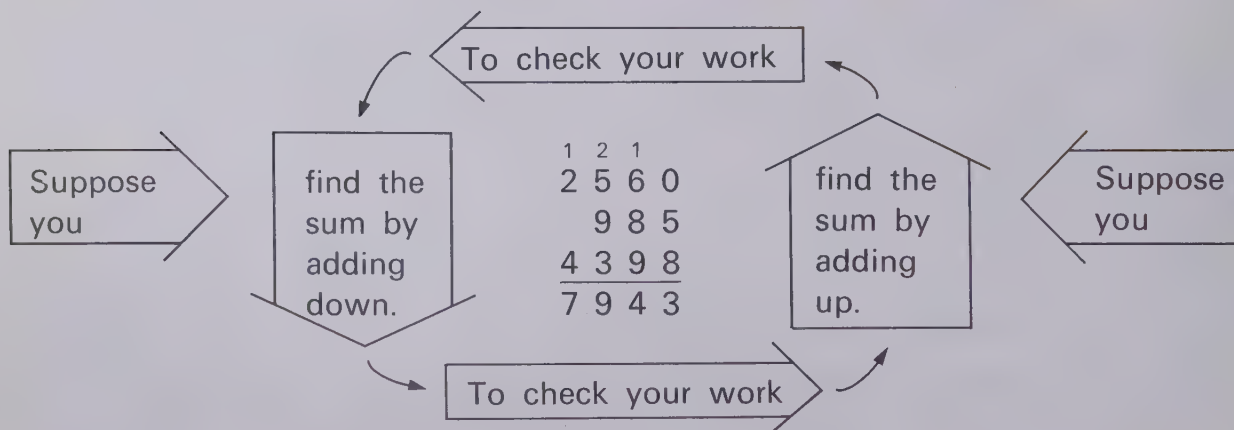
$$\begin{array}{r} 121 \\ 2560 \\ 985 \\ 4398 \\ \hline 943 \end{array}$$

Add
thousands.

$$\begin{array}{r} 121 \\ 2560 \\ 985 \\ 4398 \\ \hline 7943 \end{array}$$



There were 7943 bales taken from the fields.



Working Together

Show the addends with their places lined up in vertical form


1. $3246 + 845 + 1056$


2. $807 + 98 + 1343$


Add by following the steps.


3.

4763
275
1876

Add ones and regroup. 


Add tens and regroup. 


Add hundreds and regroup. 


Add thousands. 


4.

7906
219
1817

Add and regroup if needed. 

Add and regroup if needed. 

Add and regroup if needed. 

Add. 

Find the sum by adding down in each column.

Find the sum by adding up in each column.

Add. Then add in the other direction to check your work.

5. 1943
 2647
 3552

6. 1943
 2647
 3552

7. 6473
 928
 1345

8. $\$4251$
 1984
 683

Exercises

Add. Then add in the other direction to check.

1. 367
 8250
 386

2. 4326
 1583
 974

3. 2866
 1239
 3673

4. 134
 3235
 4678

5. 865
 7327
 1403

6. 5324
 3049
 888

7. $4376 + 293 + 1406$

8. $2834 + 367 + 5144$

9. $286 + 3914 + 4773$

10. $3086 + 2143 + 4702$

11. $2309 + 1671 + 4235$

12. $4300 + 299 + 1934$

13. $628 + 114 + 7763$

14. $121 + 4404 + 3371$

15. $5368 + 205 + 3327$

16. 2185
 6495
 485

17. 5176
 987
 928

18. 1920
 4951
 2934

19. 218
 4549
 3326

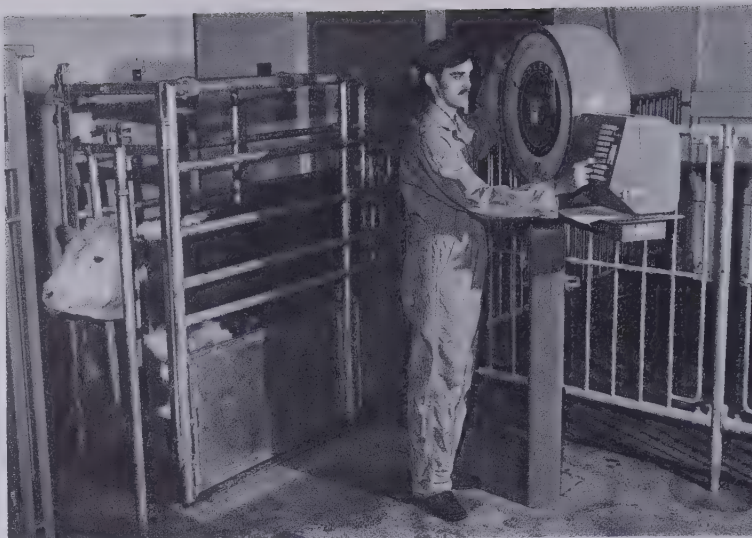
20. $\$7282$
 632
 1026

21. $\$1327$
 5329
 1345

Estimating the Sum

The scales showed 341 kg, 508 kg, and 467 kg for the three cattle Helen raised. How heavy were the cattle together?

Add 341, 508, and 467.



For an easy estimate of the sum, round to the nearest hundred.

Round 341 to 300
 Round 508 to 500
 Round 467 to 500
 Add to get 1300

For the exact sum, add in the usual way.

$$\begin{array}{r} 11 \\ 341 \\ 508 \\ 467 \\ \hline 1316 \end{array}$$

The cattle together were about 1300 kg.
 The cattle together were exactly 1316 kg.

Working Together

Round each to the nearest hundred.

1. 724 2. 1289 3. 450

Round to the nearest hundred and add to estimate the sum

7. $306 + 592 + 400$
 8. $1644 + 250 + 922$

Round each to the nearest thousand.

4. 3645 5. 947 6. 6500

Round to the nearest thousand and add to estimate the sum.

9. $1243 + 3760 + 2939$
 10. $4039 + 998 + 2500$

Complete the chart.

		Estimate	Exact sum
11.	$291 + 476 + 1319$?	?
12.	$2444 + 875 + 3762$?	?
13.	$\$1927 + \$4205 + \$2366$?	?

When estimating a sum, round *all* the addends to either tens, or hundreds, or thousands.

Exercises

Round and add to estimate each sum. Then find the exact sum.

1. $385 + 232 + 456$
2. $\$515 + \$1294 + \$388$
3. $2328 + 1926 + 1153$
4. $\$4481 + \$1225 + \$3500$
5. $\begin{array}{r} 2347 \\ 881 \\ \hline 1152 \end{array}$
6. $\begin{array}{r} 5839 \\ 949 \\ \hline 1855 \end{array}$
7. $\begin{array}{r} 3243 \\ 1527 \\ \hline 4489 \end{array}$
8. $\begin{array}{r} 392 \\ 760 \\ \hline 1205 \end{array}$
9. $\begin{array}{r} \$4337 \\ 2358 \\ \hline 1679 \end{array}$
10. $\begin{array}{r} \$765 \\ 209 \\ \hline 98 \end{array}$

Answer each question with an estimate.

11. 912 cattle, 625 horses, and 458 pigs were entered in the judging contests. How many cattle, horses, and pigs were entered?
12. Helen sold her three cattle for \$1177, \$788, and \$1097. How much did she get in all?
13. 1503 rodeo tickets were sold on Friday. 3498 tickets were sold on Saturday. 4079 tickets were sold on Sunday. How many tickets were sold on the three days?
- *14. Three beef cattle show 489 kg, 475 kg, and 530 kg on the scales. The load limit for a truck is 1400 kg. Are the cattle too heavy for the truck?

In the Prairie Provinces, ranchers use brands to keep track of their cattle.

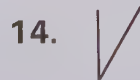
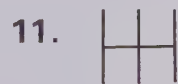
The brand of the Lazy R Ranch may look like this:



Draw a brand for each of these ranches.

1. Lazy 8 Ranch
2. Rocking Chair Ranch
3. Triple X Ranch
4. Sliding Z Ranch
5. Bar N Ranch
6. Tricky Triangle Ranch
7. Running W Ranch
8. Square Knot Ranch

Name a ranch for each of these brands.



17. Make up a name for a ranch and draw its brand.

**try
this**

Practice

Solve.

1. Andy's farm equipment used 438 L (litres) of gasoline in July, 277 L in August, and 557 L in September. How much gasoline was used during these three months?
2. Andy sold his corn for \$5360 and his beans for \$3284. How much did Andy get for his corn and beans together?
3. Andy bought feed three times during the year. One time he bought 870 kg of feed. The next time he bought 1090 kg and the third time he bought 1380 kg. How much feed did he buy in all?
4. Andy sold three pigs. One was 96 kg, one was 109 kg, and the third was 118 kg. How heavy were the three pigs together?

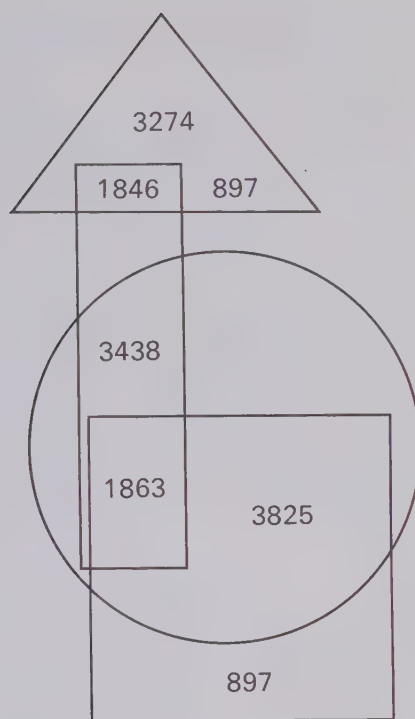


Add.

- | | | | | |
|--|--|--|---|--|
| 5. $1254 + 5504 + 2047$ | 6. $1780 + 3791 + 1643$ | | | |
| 7. $\$2503 + \$1434 + \$659$ | 8. $801 + 6898 + 1387$ | | | |
| 9. $4299 + 918 + 1735$ | 10. $\$752 + \$2649 + \$438$ | | | |
| 11. $\begin{array}{r} 4404 \\ 1880 \\ \hline 3493 \end{array}$ | 12. $\begin{array}{r} 2486 \\ 2682 \\ \hline 3167 \end{array}$ | 13. $\begin{array}{r} 622 \\ 3983 \\ \hline 474 \end{array}$ | 14. $\begin{array}{r} 467 \\ 606 \\ \hline 2760 \end{array}$ | 15. $\begin{array}{r} \$3287 \\ 4651 \\ \hline 1315 \end{array}$ |
| 16. $\begin{array}{r} 6390 \\ 2518 \\ \hline 954 \end{array}$ | 17. $\begin{array}{r} 7235 \\ 877 \\ \hline 152 \end{array}$ | 18. $\begin{array}{r} 4688 \\ 2951 \\ \hline 1463 \end{array}$ | 19. $\begin{array}{r} 3285 \\ 190 \\ \hline 6415 \end{array}$ | 20. $\begin{array}{r} \$2625 \\ 4213 \\ \hline 769 \end{array}$ |

Find the sum of

21. the numbers inside the square.
22. the numbers inside the rectangle.
23. the numbers inside the triangle.
24. the numbers inside the circle.
25. the numbers inside both the circle and the square.
26. the numbers inside both the circle and the rectangle.
27. the numbers that are in only the triangle.



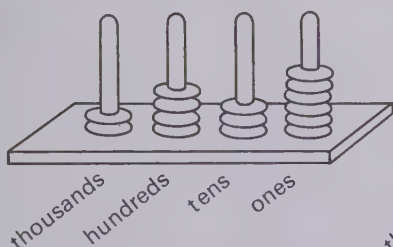
Round to the nearest hundred and estimate each sum.

28. $387 + 546 + 899$
29. $589 + 476 + 229$

Round to the nearest thousand and estimate each sum.

30. $1544 + 2725 + 4349$
31. $3765 + 1204 + 2916$

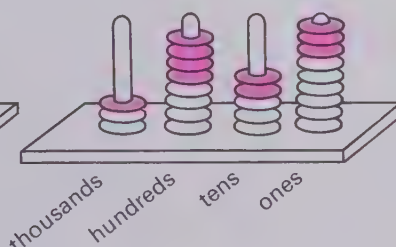
An abacus can be used for adding numbers. This abacus shows 2436.



Add 1423 to 2436.

2436
+ 1423

3859



Draw an abacus.

1. Show the number 3105.
2. Show the result of adding 2651 to 3105.

Draw an abacus.

3. Show the number 4837.
4. Show the result of adding 1866 to 4837.

Remember that no peg can hold more than nine rings.

**try
this**

Choosing the Information Needed

Sometimes a lot of information is given,
but it is not all needed for solving a problem.

PIZZA			
— PEPPERONI	— GREEN OLIVES		
— MUSHROOMS	— BLACK OLIVES		
— GREEN PEPPERS	— ANCHOVIES		
— SLICED ONIONS	— SHRIMPS		
— SLICED TOMATOES	— PINEAPPLE		
— BACK BACON	— PRUNES		
— HAM	— SAUSAGE		
— SALAMI	— HOT SAUSAGE		

	SMALL	MEDIUM	LARGE
Basic cheese	\$2.00	\$3.30	\$3.90
1 Choice	2.35	3.75	4.45
2 Choices	2.65	4.10	4.85
3 Choices	2.95	4.45	5.35
4 Choices	3.25	4.85	5.85
5 Choices	3.55	5.25	6.35
6 Choices	3.80	5.65	6.85
7 Choices	4.00	6.00	7.30
8 Choices	4.20	6.30	7.70
9 Choices	4.40	6.55	8.10
The Works	4.50	6.75	8.45

SPECIAL	3.05	4.65	5.60
Mushrooms, Green Peppers, Bacon, Pepperoni			
Extra of each ingredient	0.35	0.45	0.55

\$0.25 extra for thicker crust.
\$0.75 delivery charge on orders less than \$5.25.

CLOSED ON MONDAYS

PROBLEM SOLVING

Karl bought a medium pizza
with ham and extra cheese
at the pizza house.

\$3.75 ... medium, 1 choice
0.45 ... double cheese
4.20

The pizza cost \$4.20.

Solve.

1. How much for a large pizza with onions and shrimp?
2. How much for a medium pizza and a large pizza, each with ham, onions, and the two types of olives?
3. How much for a medium pizza with mushrooms, green peppers, bacon, pepperoni, and extra pepperoni delivered to your home?
4. Last Monday, Helga wanted a small pizza with hot peppers. Why couldn't she get the pizza she wanted?
5. Have a friend order a pizza from you. Tell how much it will cost.

Checking Up

Add.

- | | | | | |
|---|--|---|--|---|
| 1. $\begin{array}{r} 18 \\ 61 \\ \hline \end{array}$ | 2. $\begin{array}{r} 423 \\ 124 \\ \hline \end{array}$ | 3. $\begin{array}{r} 2031 \\ 6535 \\ \hline \end{array}$ | 4. $\begin{array}{r} 59 \\ 28 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$127 \\ 35 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 3548 \\ 1349 \\ \hline \end{array}$ | 7. $\begin{array}{r} 91 \\ 24 \\ \hline \end{array}$ | 8. $\begin{array}{r} 243 \\ 585 \\ \hline \end{array}$ | 9. $\begin{array}{r} 3186 \\ 262 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$326 \\ 811 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 3823 \\ 2546 \\ \hline \end{array}$ | 12. $\begin{array}{r} 5751 \\ 843 \\ \hline \end{array}$ | 13. $\begin{array}{r} 2457 \\ 377 \\ \hline \end{array}$ | 14. $\begin{array}{r} 74 \\ 49 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$159 \\ 196 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 857 \\ 713 \\ \hline \end{array}$ | 17. $\begin{array}{r} 4903 \\ 2907 \\ \hline \end{array}$ | 18. $\begin{array}{r} 4619 \\ 574 \\ \hline \end{array}$ | 19. $\begin{array}{r} 2657 \\ 3352 \\ \hline \end{array}$ | 20. $\begin{array}{r} \$6264 \\ 872 \\ \hline \end{array}$ |
| 21. $\begin{array}{r} 483 \\ 583 \\ \hline \end{array}$ | 22. $\begin{array}{r} 7146 \\ 1978 \\ \hline \end{array}$ | 23. $\begin{array}{r} 5856 \\ 2366 \\ \hline \end{array}$ | 24. $\begin{array}{r} 968 \\ 794 \\ \hline \end{array}$ | 25. $\begin{array}{r} \$3579 \\ 4865 \\ \hline \end{array}$ |
| 26. $\begin{array}{r} 2947 \\ 1643 \\ 5234 \\ \hline \end{array}$ | 27. $\begin{array}{r} 5464 \\ 839 \\ 2645 \\ \hline \end{array}$ | 28. $\begin{array}{r} 489 \\ 1623 \\ 379 \\ \hline \end{array}$ | 29. $\begin{array}{r} 3351 \\ 2975 \\ 783 \\ \hline \end{array}$ | 30. $\begin{array}{r} \$4608 \\ 3089 \\ 1753 \\ \hline \end{array}$ |

Choose the better estimate for each sum.

31. $755 + 1066 + 443$ 32. $2316 + 1548 + 1299$ 33. $\$1172 + \$485 + \$626$

2200 or 2300

4000 or 5000

\$2100 or \$2300

Solve.

- | | |
|---|---|
| 34. A farmer sold the apple crop for \$3685 and the pear crop for \$2490. How much did the two crops sell for? | 35. The tractor is 3188 kg. The loaded wagon is 2876 kg. How heavy are the tractor and the wagon together? |
| 36. Betty picked 879 boxes of raspberries, Henry picked 608, and Jill picked 1170. How many boxes did they pick in all? | 37. On Thursday 1240 tickets were sold at the fair. 3929 were sold on Friday and 4087 on Saturday. How many were sold in all? |
| 38. The car raffle earned \$3076. The boat raffle earned \$1927. How much did the raffles earn? | 39. The pens held 47 sheep, 136 cows, and 39 pigs. How many animals were in the pens? |

3 SUBTRACTION

Basic Facts

Ivy had 15 pictures.
She gave away 9 of
them. How many does
she have left?

Subtract 9 from 15.

$$\begin{array}{r} 15 \\ 9 \\ \hline 6 \end{array}$$

$$15 - 9 = 6$$

Ivy has 6 pictures left.



Exercises

Subtract.

- | | | | | |
|--|--|--|--|--|
| 1. $13 - 6$ | 2. $8 - 4$ | 3. $12 - 7$ | 4. $16 - 7$ | 5. $11 - 3$ |
| 6. $11 - 8$ | 7. $15 - 7$ | 8. $10 - 3$ | 9. $10 - 8$ | 10. $14 - 6$ |
| 11. $9 - 3$ | 12. $13 - 5$ | 13. $8 - 3$ | 14. $17 - 9$ | 15. $12 - 6$ |
| 16. $11 - 2$ | 17. $11 - 7$ | 18. $15 - 6$ | 19. $11 - 5$ | 20. $15 - 8$ |
| 21. $\begin{array}{r} 10 \\ 2 \\ \hline \end{array}$ | 22. $\begin{array}{r} 13 \\ 4 \\ \hline \end{array}$ | 23. $\begin{array}{r} 17 \\ 8 \\ \hline \end{array}$ | 24. $\begin{array}{r} 12 \\ 5 \\ \hline \end{array}$ | 25. $\begin{array}{r} 14 \\ 5 \\ \hline \end{array}$ |
| 26. $\begin{array}{r} 8 \\ 6 \\ \hline \end{array}$ | 27. $\begin{array}{r} 13 \\ 9 \\ \hline \end{array}$ | 28. $\begin{array}{r} 7 \\ 3 \\ \hline \end{array}$ | 29. $\begin{array}{r} 11 \\ 6 \\ \hline \end{array}$ | 30. $\begin{array}{r} 10 \\ 1 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} 10 \\ 6 \\ \hline \end{array}$ | 32. $\begin{array}{r} 13 \\ 7 \\ \hline \end{array}$ | 33. $\begin{array}{r} 12 \\ 9 \\ \hline \end{array}$ | 34. $\begin{array}{r} 14 \\ 8 \\ \hline \end{array}$ | 35. $\begin{array}{r} 18 \\ 9 \\ \hline \end{array}$ |
| 36. $\begin{array}{r} 13 \\ 8 \\ \hline \end{array}$ | 37. $\begin{array}{r} 11 \\ 9 \\ \hline \end{array}$ | 38. $\begin{array}{r} 12 \\ 4 \\ \hline \end{array}$ | | |

Complete each subtraction chain.

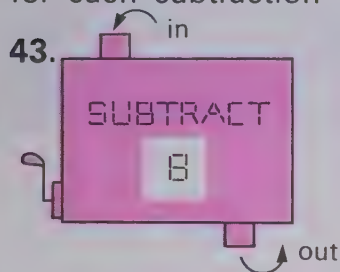
39. $\begin{array}{r} 13 \\ 4 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 4 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 4 \\ \hline 1 \end{array}$

40. $\begin{array}{r} 10 \\ 4 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 3 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 2 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 1 \\ \hline 0 \end{array}$

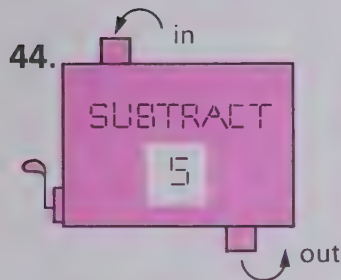
41. $\begin{array}{r} 11 \\ 5 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 1 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 3 \\ \hline \end{array}$

42. $\begin{array}{r} 16 \\ 8 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 2 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 5 \\ \hline \end{array} \nearrow \begin{array}{r} \\ 0 \\ \hline \end{array}$

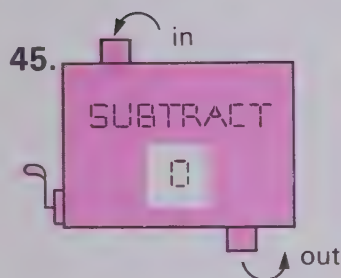
Copy and complete the table for each subtraction machine.



in	15	10	13	14	8	12
out	7					

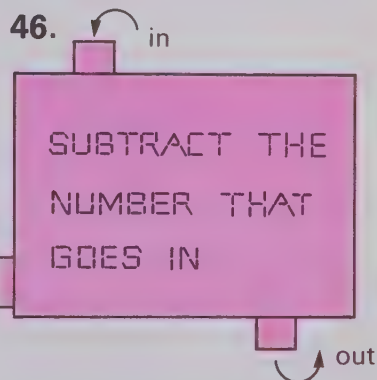


in	10	12	8	6	11	7
out						

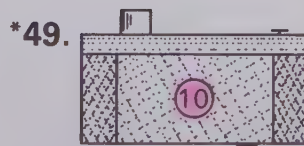
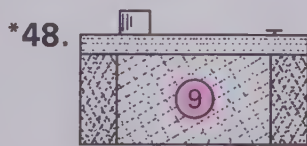
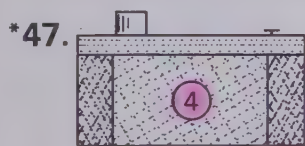


in	3	8	5
out			

What number would always come out of this machine?



The window in the back of a camera shows which picture on the film will be taken next. The films in these cameras have 12 pictures each. How many pictures are left to be taken on each?

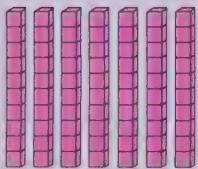


Subtraction, Regrouping Tens

The paint rack has 73 bottles of paint. If 25 bottles are removed, how many bottles will be left in the rack?

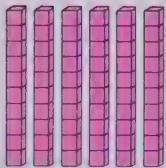


Subtract 25 from 73.



$$\begin{array}{r} \text{tens} \quad \text{ones} \\ 7 \quad 3 \\ 2 \quad 5 \\ \hline \end{array}$$

Show $73 - 25$
in vertical form
and try to
subtract ones.



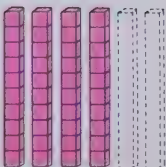
$$\begin{array}{r} 6 \quad 13 \\ 7 \quad 3 \\ 2 \quad 5 \\ \hline \end{array}$$

Cannot subtract
5 ones from 3 ones.
Regroup
7 tens, 3 ones as
6 tens, 13 ones.



$$\begin{array}{r} 6 \quad 13 \\ 7 \quad 3 \\ 2 \quad 5 \\ \hline 8 \end{array}$$

Subtract the ones.



$$\begin{array}{r} 6 \quad 13 \\ 7 \quad 3 \\ 2 \quad 5 \\ \hline 4 \quad 8 \end{array}$$

Subtract the tens.

There are 48 bottles left.



Working Together

Regroup to show 10 more ones.

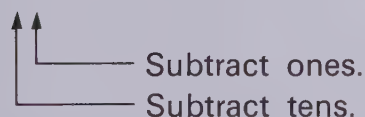
tens		ones
3		16
4		6

Example:

tens		ones		tens		ones
1.		3 7		2.		8 4

Subtract by following the steps.

3. $\begin{array}{r} 45 \\ - 26 \\ \hline \end{array}$ ← Regroup to show 10 more ones.



Subtract.

4. $\begin{array}{r} 97 \\ - 61 \\ \hline \end{array}$	5. $\begin{array}{r} 83 \\ - 46 \\ \hline \end{array}$	6. $\begin{array}{r} 40 \\ - 16 \\ \hline \end{array}$
--	--	--

Exercises

Find the difference of

- | | |
|---------------|---------------|
| 1. 62 and 25. | 2. 19 and 78. |
| 3. 76 and 44. | 4. 64 and 46. |
| 5. 28 and 47. | 6. 18 and 78. |

Subtract.

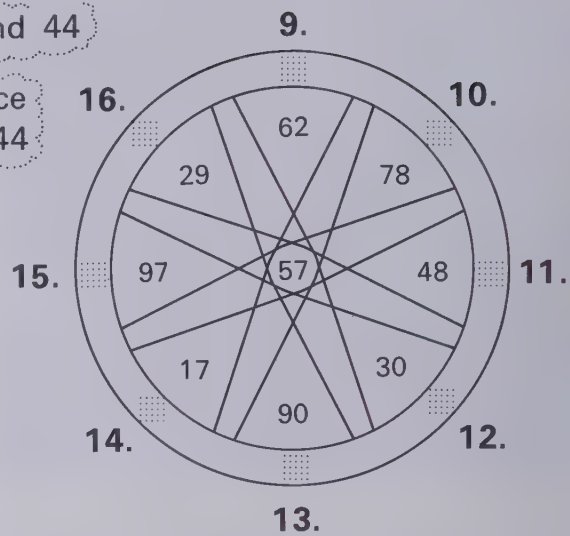
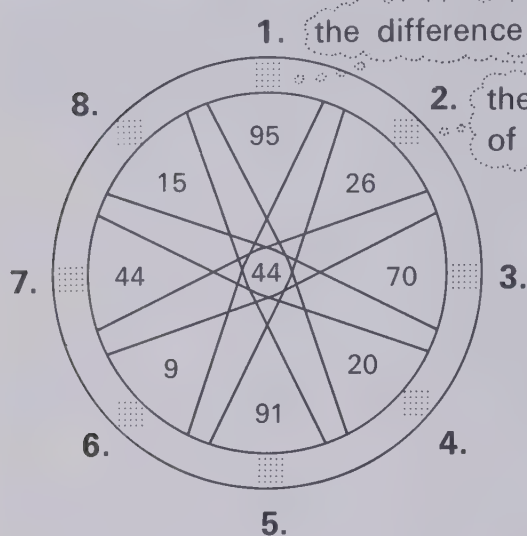
- | | | |
|---|---|---|
| 7. $\begin{array}{r} 80 \\ - 28 \\ \hline \end{array}$ | 8. $\begin{array}{r} 78 \\ - 35 \\ \hline \end{array}$ | 9. $\begin{array}{r} 43 \\ - 5 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} 60 \\ - 19 \\ \hline \end{array}$ | 11. $\begin{array}{r} 57 \\ - 29 \\ \hline \end{array}$ | 12. $\begin{array}{r} 97 \\ - 23 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 52 \\ - 7 \\ \hline \end{array}$ | 14. $\begin{array}{r} 77 \\ - 57 \\ \hline \end{array}$ | 15. $\begin{array}{r} 74 \\ - 68 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 68 \\ - 26 \\ \hline \end{array}$ | 17. $\begin{array}{r} 56 \\ - 18 \\ \hline \end{array}$ | 18. $\begin{array}{r} 85 \\ - 36 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 94 \\ - 45 \\ \hline \end{array}$ | 20. $\begin{array}{r} 94 \\ - 63 \\ \hline \end{array}$ | 21. $\begin{array}{r} 60 \\ - 33 \\ \hline \end{array}$ |

Solve.

22. Bill has 94¢. He buys a model airplane for 75¢. How much money does Bill have left?
23. The hobby shop sold 33 model cars and 14 model airplanes. How many more model cars than airplanes did it sell?
24. 73 models are in the show. 27 of them are airplanes. How many other models are there?
25. There are 50 models in one model car set. Rose has 33 of them. How many more models does she need to complete the set?

Practice

Write the differences that complete each wheel.



Subtract. The differences will help you solve the Knock! Knock! joke.

A

$$\begin{array}{r} 78 \\ - 33 \\ \hline \end{array}$$

B

$$\begin{array}{r} 47 \\ - 19 \\ \hline \end{array}$$

C

$$\begin{array}{r} 81 \\ - 15 \\ \hline \end{array}$$

D

$$\begin{array}{r} 83 \\ - 37 \\ \hline \end{array}$$

E

$$\begin{array}{r} 74 \\ - 25 \\ \hline \end{array}$$

G

$$\begin{array}{r} 56 \\ - 38 \\ \hline \end{array}$$

H

$$\begin{array}{r} 36 \\ - 29 \\ \hline \end{array}$$

I

$$\begin{array}{r} 52 \\ - 28 \\ \hline \end{array}$$

L

$$\begin{array}{r} 45 \\ - 18 \\ \hline \end{array}$$

N

$$\begin{array}{r} 96 \\ - 24 \\ \hline \end{array}$$

O

$$\begin{array}{r} 33 \\ - 8 \\ \hline \end{array}$$

R

$$\begin{array}{r} 69 \\ - 36 \\ \hline \end{array}$$

S

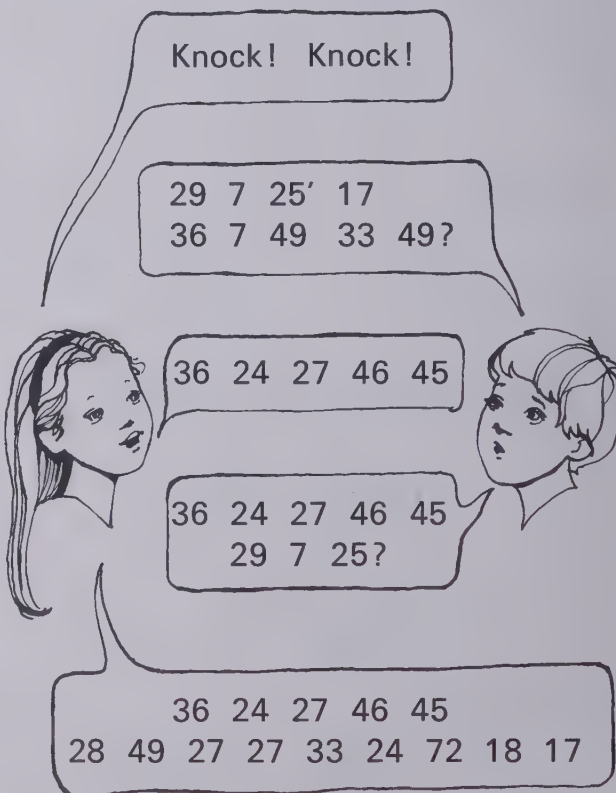
$$\begin{array}{r} 34 \\ - 17 \\ \hline \end{array}$$

T

$$\begin{array}{r} 65 \\ - 29 \\ \hline \end{array}$$

W

$$\begin{array}{r} 85 \\ - 56 \\ \hline \end{array}$$



Rita delivers 80 newspapers and Jerry delivers 73 after school on their paper routes.



Solve.

1. How many more papers does Rita deliver than Jerry?
2. Rita had delivered 55 of her papers when she stopped to rest. How many did she have left to deliver?
3. Jerry had delivered 44 when he stopped to rest. How many did he have left to deliver?
4. By the time she reaches Maple Lane, Rita has delivered 62 papers. How many does she have left?
5. One week Rita collected \$82 on her route. Her bill was \$64. How much did she make that week?

Sometimes Rita and Jerry use their bicycles.

	Bicycle	Walking
Rita	42 min	73 min
Jerry	29 min	55 min

6. How much more time does Jerry take walking instead of riding?
7. How much less time does Rita need to deliver papers when she uses her bicycle?
8. How much more time than Jerry does Rita take when both walk?
9. How much less time than Rita does Jerry take when both ride?
- *10. Who finishes sooner when one walks and the other rides? How much sooner?

Subtraction, Regrouping Tens, Hundreds, or Thousands

516 children had their eyes tested this year. 384 had their eyes tested last year. How many more had their eyes tested this year?

Subtract 384 from 516.

Subtract ones.
Then try to
subtract tens.

hundreds	tens	ones
5	1	6
3	8	4
		2

Cannot subtract
8 tens from 1 ten.

Regroup
5 hundreds, 1 ten as
4 hundreds, 11 tens.

4	11	
5	1	6
3	8	4
		2

Subtract tens.

4	11	
5	1	6
3	8	4
	3	2

Subtract hundreds.

4	11	
5	1	6
3	8	4
1	3	2

132 more children
were tested this year.

D	K	R	8
H	V	C	6
N	R	K	5
O	C	V	4
R	O	C	3
K	D	V	2
V	R	N	2
H	N	O	1

Working Together

Regroup to show 10 more tens.

hundreds | tens | ones

1.

2	2	7
---	---	---

 2. 4425

Regroup to show 10 more hundreds.

3.

5	3	8	7
---	---	---	---

 4. 8069

Complete each subtraction.

5.

4	14
5	4 9
2	92
7	

 6.

4	10
6	5 02
3	192
0	

 7.

6	14
7	4 68
3	725
43	

Subtract.

8.

6	78
3	96

 9.

2	761
4	23

 10.

\$	7	2	8	5
	5	9	4	4



This is a
Magic Square.

Add across, down,
or diagonally
and get 93.

Try it.

1.

52	3	38	→ ?
17	31	45	→ ?
24	59	10	→ 93
↓	↓	↓	↘ ?
93	?	93	

Complete these
Magic Squares
so that all sums
are 246.

$$85 + 88 + ? = 246$$

$$173 + ? = 246$$

Subtract
173 from 246.

2.

?	?	85
?	?	88
79	?	?

3.

99	68	?	?
?	?	?	86
?	79	80	80
67	58	?	?

Exercises

Subtract.

- | | | | |
|---|---|---|---|
| 1. $\begin{array}{r} 589 \\ 294 \\ \hline \end{array}$ | 2. $\begin{array}{r} 1405 \\ 122 \\ \hline \end{array}$ | 3. $\begin{array}{r} 7265 \\ 4555 \\ \hline \end{array}$ | 4. $\begin{array}{r} 2843 \\ 1212 \\ \hline \end{array}$ |
| 5. $\begin{array}{r} 786 \\ 459 \\ \hline \end{array}$ | 6. $\begin{array}{r} 6086 \\ 536 \\ \hline \end{array}$ | 7. $\begin{array}{r} 529 \\ 487 \\ \hline \end{array}$ | 8. $\begin{array}{r} 5685 \\ 1227 \\ \hline \end{array}$ |
| 9. $\begin{array}{r} 5209 \\ 3405 \\ \hline \end{array}$ | 10. $\begin{array}{r} 6249 \\ 3181 \\ \hline \end{array}$ | 11. $\begin{array}{r} 3842 \\ 637 \\ \hline \end{array}$ | 12. $\begin{array}{r} 549 \\ 406 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} \$9478 \\ 5517 \\ \hline \end{array}$ | 14. $\begin{array}{r} \$678 \\ 384 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$7277 \\ 1636 \\ \hline \end{array}$ | 16. $\begin{array}{r} \$8543 \\ 3218 \\ \hline \end{array}$ |

**try
this**

Subtraction, Two or More Regroupings

The shoe store had 3432 pairs of shoes in stock one month. It sold 1775 pairs that month. How many pairs did it have left at the end of the month?

Subtract 1775 from 3432.

Regroup

3 tens, 2 ones as

2 tens, 12 ones.

Subtract ones.

$$\begin{array}{r} 2 \ 12 \\ 3 \ 4 \ ~~3~~ \ ~~2~~ \\ 1 \ 7 \ 7 \ 5 \\ \hline 7 \end{array}$$

Regroup

4 hundreds, 2 tens as

3 hundreds, 12 tens.

Subtract tens.

$$\begin{array}{r} 12 \\ 3 \ ~~4~~ \ ~~3~~ \ ~~2~~ \\ 1 \ 7 \ 7 \ 5 \\ \hline 5 \ 7 \end{array}$$

Regroup

3 thousands, 3 hundreds as

2 thousands, 13 hundreds.

Subtract hundreds.

$$\begin{array}{r} 13 \ 12 \\ 2 \ ~~3~~ \ ~~4~~ \ ~~3~~ \ ~~2~~ \\ 1 \ 7 \ 7 \ 5 \\ \hline 6 \ 5 \ 7 \end{array}$$

Subtract thousands.

$$\begin{array}{r} 13 \ 12 \\ 2 \ ~~3~~ \ ~~4~~ \ ~~3~~ \ ~~2~~ \\ 1 \ 7 \ 7 \ 5 \\ \hline 1 \ 6 \ 5 \ 7 \end{array}$$

The shoe store had 1657 pairs of shoes at the end of the month.



Working Together

Regroup to show 10 more tens.
Then complete the subtraction.

$$\begin{array}{r} 411 \\ 1. \ 651 \\ \underline{195} \\ 6 \end{array}$$

$$\begin{array}{r} 112 \\ 2. \ 6922 \\ \underline{3439} \\ 3 \end{array}$$

Regroup to show 10 more hundreds.
Then complete the subtraction.

$$\begin{array}{r} 110 \\ 3. \ 8207 \\ \underline{2253} \\ 54 \end{array}$$

$$\begin{array}{r} 13 \\ 0811 \\ 4. \ 4141 \\ \underline{2794} \\ 47 \end{array}$$

Subtract by following the steps.

5.
$$\begin{array}{r} 7416 \\ \underline{2538} \end{array}$$

Regroup and subtract. $\xrightarrow{\quad}$

Regroup and subtract. $\xrightarrow{\quad}$

Regroup and subtract. $\xrightarrow{\quad}$

Subtract. $\xrightarrow{\quad}$

Subtract.

$$\begin{array}{r} 6. \ 382 \\ \underline{295} \end{array}$$

$$\begin{array}{r} 7. \ 4560 \\ \underline{943} \end{array}$$

$$\begin{array}{r} 8. \ 9874 \\ \underline{2893} \end{array}$$

$$\begin{array}{r} 9. \ \$2632 \\ \underline{1758} \end{array}$$

Exercises

Subtract.

$$\begin{array}{r} 1. \ 923 \\ \underline{678} \end{array}$$

$$\begin{array}{r} 2. \ 4292 \\ \underline{703} \end{array}$$

$$\begin{array}{r} 3. \ 3865 \\ \underline{1552} \end{array}$$

$$\begin{array}{r} 4. \ 9414 \\ \underline{3682} \end{array}$$

$$\begin{array}{r} 5. \ 3676 \\ \underline{888} \end{array}$$

$$\begin{array}{r} 6. \ 1845 \\ \underline{175} \end{array}$$

$$\begin{array}{r} 7. \ 5682 \\ \underline{1764} \end{array}$$

$$\begin{array}{r} 8. \ 4814 \\ \underline{3536} \end{array}$$

$$\begin{array}{r} 9. \ 7357 \\ \underline{4544} \end{array}$$

$$\begin{array}{r} 10. \ 7964 \\ \underline{3965} \end{array}$$

$$\begin{array}{r} 11. \ \$1438 \\ \underline{742} \end{array}$$

$$\begin{array}{r} 12. \ \$3526 \\ \underline{1869} \end{array}$$

Solve.

13. In one month, 2375 persons tried on shoes. 1685 persons bought at least one pair. How many persons tried on shoes but did not buy?
14. The shoe store sold 1775 pairs of shoes. 588 pairs were sports shoes. How many pairs did it sell that were not sports shoes?
15. On one Special Sale day, the shoe store sold \$2130 worth of shoes for \$1768. How much less did the shoes cost on sale?



Practice

Subtract.

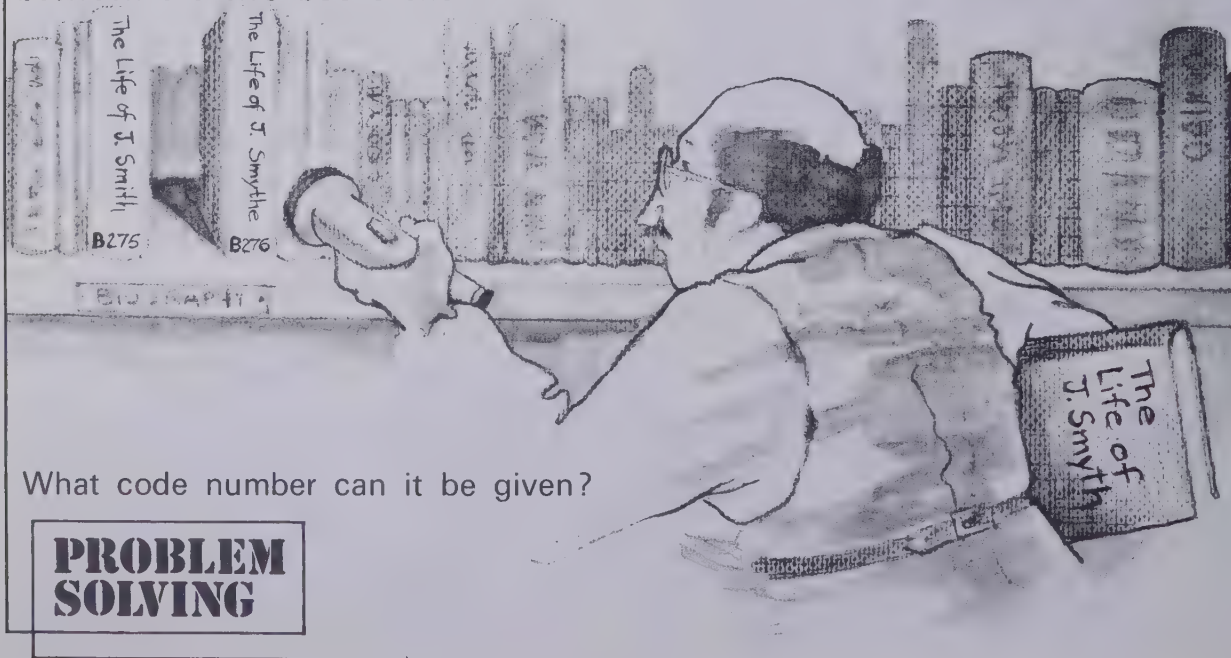
- | | | | | |
|---|--|--|---|---|
| 1. $\begin{array}{r} 5351 \\ - 470 \\ \hline \end{array}$ | 2. $\begin{array}{r} 9254 \\ - 3808 \\ \hline \end{array}$ | 3. $\begin{array}{r} 9104 \\ - 5553 \\ \hline \end{array}$ | 4. $\begin{array}{r} 567 \\ - 419 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$6279 \\ - 652 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 8836 \\ - 5359 \\ \hline \end{array}$ | 7. $\begin{array}{r} 8673 \\ - 1043 \\ \hline \end{array}$ | 8. $\begin{array}{r} 923 \\ - 466 \\ \hline \end{array}$ | 9. $\begin{array}{r} 7392 \\ - 5877 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$4116 \\ - 923 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 8588 \\ - 7673 \\ \hline \end{array}$ | 12. $\begin{array}{r} 2513 \\ - 267 \\ \hline \end{array}$ | 13. $\begin{array}{r} 8316 \\ - 747 \\ \hline \end{array}$ | 14. $\begin{array}{r} 5350 \\ - 1978 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$7261 \\ - 4883 \\ \hline \end{array}$ |

These exercises are not correct.

Copy the exercises and ring the errors you find. Then subtract correctly.

- | | | | | |
|--|--|--|--|---|
| 16. $\begin{array}{r} 3378 \\ - 389 \\ \hline 3011 \end{array}$ | 17. $\begin{array}{r} 8352 \\ - 5811 \\ \hline 3541 \end{array}$ | 18. $\begin{array}{r} 6218 \\ - 3572 \\ \hline 3746 \end{array}$ | 19. $\begin{array}{r} 6638 \\ - 3748 \\ \hline 2910 \end{array}$ | 20. $\begin{array}{r} \$3782 \\ - 126 \\ \hline \$2522 \end{array}$ |
| 21. $\begin{array}{r} 9324 \\ - 8406 \\ \hline 1928 \end{array}$ | 22. $\begin{array}{r} 6345 \\ - 1239 \\ \hline 5114 \end{array}$ | 23. $\begin{array}{r} 1164 \\ - 435 \\ \hline 739 \end{array}$ | 24. $\begin{array}{r} 8743 \\ - 6259 \\ \hline 1484 \end{array}$ | 25. $\begin{array}{r} \$3825 \\ - 1867 \\ \hline 2058 \end{array}$ |

The new library book goes on the shelf between the two books shown.



What code number can it be given?

**PROBLEM
SOLVING**

The list shows how many library books there are.

Fiction	4113
Biography	649
Sports	1873
Social Studies	2104
Science	1179

Solve.

26. Are there more science books or sports books in the library? How many more?
27. Are there more social studies books or science books? How many more?
28. Are there more fiction books or biography books? How many more?
29. Are there more sports books or social studies books? How many more?
30. How many more science books would have to be ordered to have as many science books as fiction books?
31. How many social studies and sports books are there? How many more (or fewer) of these are there than fiction books?

- *32. Someone spilled ink on the library's record book. Make a new page for the record book. Fill in the correct numbers.

	Old Total	Books Removed	New Books	New Total
<input type="radio"/> Fiction		146		4113
<input type="radio"/> Biography			74	649
<input type="radio"/> Sports	1637	79		1873
<input type="radio"/> Social Studies	1948		181	2104
<input type="radio"/> Science	982		255	1179
<input type="radio"/> Total		315	1356	

Subtraction, Regrouping with Zeros

The department store sold 4000 hats.
2974 hats were in children's sizes.
How many hats were in adult sizes?

Subtract 2974 from 4000.

4000 Cannot subtract
2974 4 ones from 0 ones.

Think 4000 shows 4 thousands.
4000 shows 40 hundreds.
4000 shows 400 tens.

^{3 9 9 10}
~~4000~~
2974

Regroup
 400 tens, 0 ones as
 399 tens, 10 ones.

^{3 9 9 10}
~~4000~~
~~2974~~
1026

Then,
 subtract ones,
 tens, hundreds,
 and thousands.



1026 of the hats were in adult sizes.

Here are some other examples
that show regrouping with zeros.

$$\begin{array}{r} 6 \ 9 \ 15 \\ 3705 \\ 2158 \\ \hline 1547 \end{array}$$





$$\begin{array}{r} 13 \\ 4 \ 8 \ 9 \ 11 \\ 5401 \\ 2863 \\ \hline 2538 \end{array}$$

$$\begin{array}{r} 3 \ 9 \ 11 \\ 4018 \\ 1361 \\ \hline 2657 \end{array}$$

$$\begin{array}{r} 11 \\ 5 \ 9 \ 115 \\ 6025 \\ 3447 \\ \hline 2578 \end{array}$$

Working Together

Complete.

- 3000 shows 3 thousands *or*  hundreds *or*  tens.
- 2056 shows 2 thousands, 5 tens, 6 ones *or*  hundreds, 5 tens, 6 ones.
- 4305 shows 4 thousands, 3 hundreds, 5 ones
or 4 thousands,  tens, 5 ones.

4. $\begin{array}{r} 499 \\ 5000 \end{array}$

5. $\begin{array}{r} 13 \\ 3038 \end{array}$

6. $\begin{array}{r} 15 \\ 2405 \end{array}$

7. $\begin{array}{r} 12 \\ 1002 \end{array}$

Complete the regrouping and subtract.

8. $\begin{array}{r} 199 \\ 2000 \\ 1824 \\ \hline \end{array}$

9. $\begin{array}{r} 12 \\ 4602 \\ 1234 \\ \hline \end{array}$

10. $\begin{array}{r} 14 \\ 3049 \\ 275 \\ \hline 4 \end{array}$

11. $\begin{array}{r} 12 \\ 5405 \\ 1726 \\ \hline \end{array}$

Subtract.

12. $\begin{array}{r} 6005 \\ 2849 \\ \hline \end{array}$

13. $\begin{array}{r} 7046 \\ 5392 \\ \hline \end{array}$

14. $\begin{array}{r} 2904 \\ 1678 \\ \hline \end{array}$

15. $\begin{array}{r} 9025 \\ 7146 \\ \hline \end{array}$

16. $\begin{array}{r} \$9101 \\ 1966 \\ \hline \end{array}$

Exercises

Subtract.

1. $\begin{array}{r} 6048 \\ 3265 \\ \hline \end{array}$

2. $\begin{array}{r} 7004 \\ 3957 \\ \hline \end{array}$

3. $\begin{array}{r} 3800 \\ 665 \\ \hline \end{array}$

4. $\begin{array}{r} 7028 \\ 1154 \\ \hline \end{array}$

5. $\begin{array}{r} \$1502 \\ 579 \\ \hline \end{array}$

6. $\begin{array}{r} 802 \\ 254 \\ \hline \end{array}$

7. $\begin{array}{r} 3030 \\ 883 \\ \hline \end{array}$

8. $\begin{array}{r} 8000 \\ 3078 \\ \hline \end{array}$

9. $\begin{array}{r} 4701 \\ 2815 \\ \hline \end{array}$

10. $\begin{array}{r} \$2028 \\ 1932 \\ \hline \end{array}$

11. $\begin{array}{r} 6073 \\ 1478 \\ \hline \end{array}$

12. $\begin{array}{r} 1002 \\ 266 \\ \hline \end{array}$

13. $\begin{array}{r} 3201 \\ 2257 \\ \hline \end{array}$

14. $\begin{array}{r} 5000 \\ 464 \\ \hline \end{array}$

15. $\begin{array}{r} \$2603 \\ 884 \\ \hline \end{array}$

16. $\begin{array}{r} 4805 \\ 3497 \\ \hline \end{array}$

17. $\begin{array}{r} 5048 \\ 1369 \\ \hline \end{array}$

18. $\begin{array}{r} 7800 \\ 4902 \\ \hline \end{array}$

19. $\begin{array}{r} 5036 \\ 2856 \\ \hline \end{array}$

20. $\begin{array}{r} \$9007 \\ 3461 \\ \hline \end{array}$

Solve.

21. The city had \$5000 for a baseball field. It spent \$4027. How much money was left?

22. \$4027 was spent for a baseball field. \$1375 of the money was used to buy the land. How much was used to complete the field?

Using Addition to Check Subtraction

The bill from the TV repair shop was \$62.50. Melanie's mother used \$80.00 to pay the bill.

The repair shop subtracted \$62.50 from \$80.00.

$$\begin{array}{r} \overset{7}{\$} \overset{9}{8} \overset{10}{0} . \overset{10}{0} 0 \\ - 62.50 \\ \hline \$17.50 \end{array}$$

It gave Melanie's mother \$17.50 change.

To check the subtraction, Melanie's mother added.

$$\begin{array}{r} \overset{1}{\$} \overset{1}{1} 7.50 \\ + 62.50 \\ \hline \$80.00 \end{array}$$

Take another look:

To check a subtraction,

$$\begin{array}{r} \overset{7}{\$} \overset{9}{8} \overset{10}{0} . \overset{10}{0} 0 \\ - 62.50 \\ \hline \$17.50 \end{array} \xrightarrow{\text{add}} \begin{array}{r} \overset{1}{\$} \overset{1}{1} 7.50 \\ + 62.50 \\ \hline \$80.00 \end{array}$$

The sum should match the first number used in the subtraction. If the two numbers do not match, there is a mistake.





Working Together

Check each subtraction by adding the two numbers inside the ring.

1. $\begin{array}{r} 84 \\ 38 \\ \hline 46 \end{array}$

2. $\begin{array}{r} 812 \\ 665 \\ \hline 147 \end{array}$

3. $\begin{array}{r} 8083 \\ 3386 \\ \hline 4697 \end{array}$

4. $\begin{array}{r} \$5000 \\ 811 \\ \hline \$4189 \end{array}$

Subtract. Add to check.

5. $\begin{array}{r} 839 \\ 492 \\ \hline \end{array}$

6. $\begin{array}{r} 7252 \\ 4457 \\ \hline \end{array}$

7. $\begin{array}{r} 7501 \\ 2795 \\ \hline \end{array}$

8. $\begin{array}{r} \$20.05 \\ 10.78 \\ \hline \end{array}$

Exercises

Subtract. Add to check.

1. $\begin{array}{r} 56 \\ 25 \\ \hline \end{array}$

2. $\begin{array}{r} 735 \\ 201 \\ \hline \end{array}$

3. $\begin{array}{r} \$4865 \\ 1463 \\ \hline \end{array}$

4. $\begin{array}{r} 84 \\ 16 \\ \hline \end{array}$

5. $\begin{array}{r} 8517 \\ 2285 \\ \hline \end{array}$

6. $\begin{array}{r} \$7486 \\ 3931 \\ \hline \end{array}$

7. $\begin{array}{r} 742 \\ 473 \\ \hline \end{array}$

8. $\begin{array}{r} 3297 \\ 659 \\ \hline \end{array}$

9. $\begin{array}{r} \$3223 \\ 1741 \\ \hline \end{array}$

10. $\begin{array}{r} 946 \\ 648 \\ \hline \end{array}$

11. $\begin{array}{r} 1246 \\ 259 \\ \hline \end{array}$

12. $\begin{array}{r} \$6320 \\ 4964 \\ \hline \end{array}$

13. $\begin{array}{r} 900 \\ 718 \\ \hline \end{array}$

14. $\begin{array}{r} 9023 \\ 1638 \\ \hline \end{array}$

15. $\begin{array}{r} \$5606 \\ 947 \\ \hline \end{array}$

Solve. Check by adding.

16. Repairs on his bike cost \$4.82.

Mike paid with a ten-dollar bill. How much change did he get?

17. The repair shop fixed Sara's boots for \$3.65. She paid with a five-dollar bill. How much change did Sara get?

18. The plumber charged \$17.07 to fix the sink. How much change did the plumber return from a twenty-dollar bill?

19. Tony had his slot car repaired at the hobby shop for \$0.53. How much change did he get from a one-dollar bill?

- *20. Emily's skateboard cost \$2.29 to fix. She paid with two two-dollar bills. How much change did she get?

Practice

Subtract. Add to check.

$$\begin{array}{r} 1. \quad 946 \\ \quad 572 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 2603 \\ \quad \quad 439 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 5228 \\ \quad 2644 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 930 \\ \quad 657 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad \$6067 \\ \quad \quad 1292 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 2005 \\ \quad \quad 616 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 8347 \\ \quad 3748 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 500 \\ \quad 379 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 6214 \\ \quad 3538 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad \$7000 \\ \quad \quad 3405 \\ \hline \end{array}$$

Subtract to find the missing addend.

Example: For $\square + 146 = 283$, use $283 - 146$.

$$11. \quad \square + 146 = 283$$

$$12. \quad 1884 + \square = 6187$$

$$13. \quad \square + 757 = 4604$$

$$14. \quad 395 + \square = 934$$

$$15. \quad \square + 632 = 1125$$

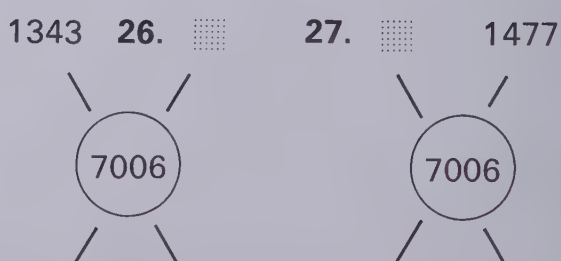
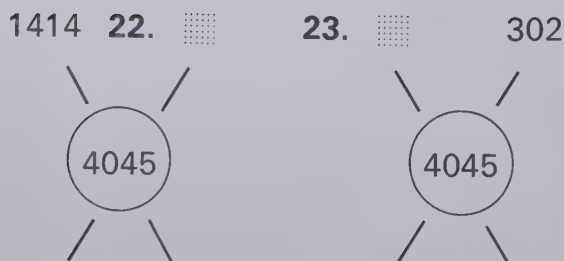
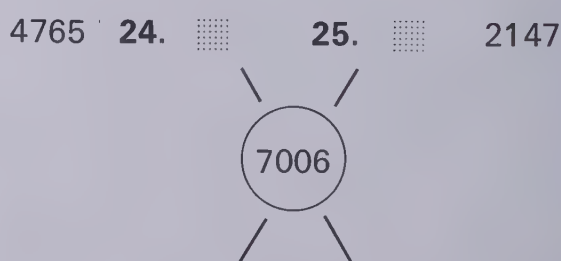
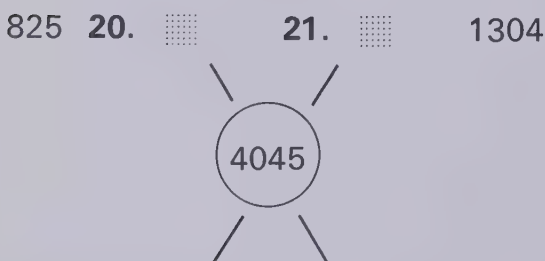
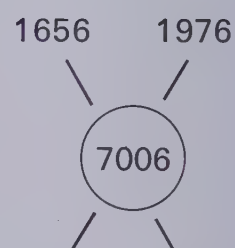
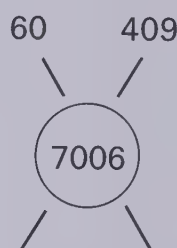
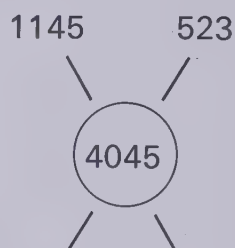
$$16. \quad 406 + \square = 4064$$

$$17. \quad \square + 2852 = 3241$$

$$18. \quad 547 + \square = 755$$

$$19. \quad \square + 4758 = 7602$$

Each circled number is the sum of the four numbers around it. Find the missing number.



$$\begin{array}{r} 589 \\ 1335 \end{array}$$

$$\begin{array}{r} 1464 \\ 1197 \end{array}$$

$$\begin{array}{r} 2888 \\ 1343 \end{array}$$

$$\begin{array}{r} 1477 \\ 1477 \end{array}$$

Do the first three subtractions in each set. Write the result for the fourth one by using the pattern.

28. $\begin{array}{r} 9655 \\ 8421 \\ \hline \end{array}$	29. $\begin{array}{r} 2687 \\ 1353 \\ \hline \end{array}$	30. $\begin{array}{r} 2030 \\ 596 \\ \hline \end{array}$	31. $\begin{array}{r} 9108 \\ 7574 \\ \hline \end{array}$
---	---	--	---

32. $\begin{array}{r} 7823 \\ 5658 \\ \hline \end{array}$	33. $\begin{array}{r} 8464 \\ 2852 \\ \hline \end{array}$	34. $\begin{array}{r} 8502 \\ 6337 \\ \hline \end{array}$	35. $\begin{array}{r} 9360 \\ 3748 \\ \hline \end{array}$
---	---	---	---

36. $\begin{array}{r} 2000 \\ 779 \\ \hline \end{array}$	37. $\begin{array}{r} 3271 \\ 829 \\ \hline \end{array}$	38. $\begin{array}{r} 5311 \\ 1648 \\ \hline \end{array}$	39. $\begin{array}{r} 6501 \\ 1617 \\ \hline \end{array}$
--	--	---	---

The differences form Magic Squares.

40.

$\begin{array}{r} 7551 \\ 5632 \\ \hline \end{array}$	$\begin{array}{r} 1017 \\ 407 \\ \hline \end{array}$	$\begin{array}{r} 9394 \\ 7849 \\ \hline \end{array}$
$\begin{array}{r} 3713 \\ 2729 \\ \hline \end{array}$	$\begin{array}{r} 2767 \\ 1409 \\ \hline \end{array}$	$\begin{array}{r} 5212 \\ 3480 \\ \hline \end{array}$
$\begin{array}{r} 6843 \\ 5672 \\ \hline \end{array}$	$\begin{array}{r} 8552 \\ 6446 \\ \hline \end{array}$	$\begin{array}{r} 1035 \\ 238 \\ \hline \end{array}$

Add across, down, or diagonally and get 4074 in this Magic Square.

41.

$\begin{array}{r} 1147 \\ 725 \\ \hline \end{array}$	$\begin{array}{r} 678 \\ 123 \\ \hline \end{array}$	$\begin{array}{r} 6803 \\ 4386 \\ \hline \end{array}$	$\begin{array}{r} 6232 \\ 3948 \\ \hline \end{array}$
$\begin{array}{r} 8608 \\ 6590 \\ \hline \end{array}$	$\begin{array}{r} 4117 \\ 1966 \\ \hline \end{array}$	$\begin{array}{r} 1000 \\ 179 \\ \hline \end{array}$	$\begin{array}{r} 966 \\ 278 \\ \hline \end{array}$
$\begin{array}{r} 3940 \\ 2055 \\ \hline \end{array}$	$\begin{array}{r} 7056 \\ 5836 \\ \hline \end{array}$	$\begin{array}{r} 3023 \\ 1537 \\ \hline \end{array}$	$\begin{array}{r} 8452 \\ 7365 \\ \hline \end{array}$
$\begin{array}{r} 2000 \\ 647 \\ \hline \end{array}$	$\begin{array}{r} 6730 \\ 4978 \\ \hline \end{array}$	$\begin{array}{r} 1400 \\ 446 \\ \hline \end{array}$	$\begin{array}{r} 4580 \\ 2961 \\ \hline \end{array}$

Turn the page for more practice.

Replace the letters with three different digits to make a subtraction fact.

1. $\begin{array}{r} A \\ B \\ \hline C \end{array}$

Replace the letters with six different digits to make a true subtraction statement.

2. $\begin{array}{r} A B \\ C D \\ \hline E F \end{array}$

Replace the letters with nine different digits to make a true subtraction statement.

3. $\begin{array}{r} A B C \\ D E F \\ \hline G H I \end{array}$

Make subtraction statements for these.

4. $\begin{array}{r} A B B \\ C D D \\ \hline C A \end{array}$

5. $\begin{array}{r} A B C \\ D A A \\ \hline D A A \end{array}$

try
this

Add or subtract to solve each problem.

42. The veterinarian gave rabies shots to 753 dogs this year. Last year the vet gave shots to 575 dogs. How many more shots were given this year?
43. The kennel boarded 382 dogs and 128 cats this year. How many dogs and cats did it board this year in all?
44. At the pet store, Amy saw a plain collar for \$2.98. A rhinestone collar cost \$4.75. How much less was the plain collar?
45. Amy bought a collar for \$2.98 and a leash for \$2.54. How much did she spend for the collar and the leash together?
46. A rawhide bone costs \$1.59. A rawhide pork chop costs \$2.00. How much more does the pork chop cost than the bone?
47. The city collected 2504 stray dogs this year. Last year it collected 1879. How many more dogs did it collect this year?
48. The Animal Shelter spent \$8000 to feed its animals this year. Last year it spent \$7175. How much more did it spend this year than last year?
- *49. One dog owner got dog tags numbered from 1997 to 2012. If the owner has 16 dogs, were there enough tags for all the dogs?



The city collected 2504 stray dogs this year. 749 dogs were reclaimed by their owners. 688 dogs were claimed by new owners. How many dogs were not claimed?

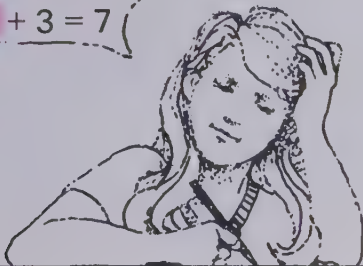
**PROBLEM
SOLVING**

Addition and Subtraction Together

What is the result of $9 - 5 + 3$?

If I subtract 5 from 9,
I get 4. Then I add
4 and 3.

$$9 - 5 + 3 = 7$$



If I add 5 and 3,
I get 8. Then I
subtract 8 from 9.

$$9 - 5 + 3 = 1$$



When both addition and subtraction
are shown, **parentheses** tell
which to do first.

first

$$(9 - 5) + 3 = 7$$

$$9 - (5 + 3) = 1$$

first

Working Together

Work inside the parentheses first.

1. $(5 + 3) + 2$ 2. $7 - (4 - 3)$ 3. $8 + (4 - 2)$

Are two different results possible?
If so, use parentheses to show how.

4. $8 - 1 + 3$ 5. $6 + 3 - 2$ 6. $9 - 6 - 2$

Exercises

Are two different results possible?
If so, use parentheses to show how.

- | | | |
|------------------------|-------------------------|-------------------------|
| 1. $88 - 42 - 36$ | 2. $62 + 43 - 26$ | 3. $84 + 178 + 157$ |
| 4. $406 - 118 + 275$ | 5. $542 - 205 - 179$ | 6. $1025 - 572 + 358$ |
| 7. $2674 + 892 + 1154$ | 8. $2194 + 3806 - 1297$ | 9. $6000 - 2165 + 3035$ |

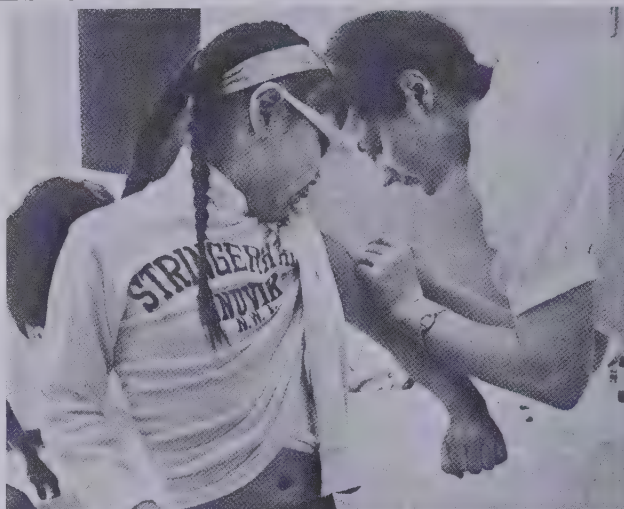
Work inside the parentheses first.

- | | | |
|----------------------------|----------------------------|----------------------------|
| 10. $(25 + 59) + 73$ | 11. $25 + (59 + 73)$ | 12. $(387 - 125) + 68$ |
| 13. $(573 + 652) - 178$ | 14. $573 + (652 - 178)$ | 15. $4056 - (2180 + 1375)$ |
| 16. $(4056 - 2180) - 1375$ | 17. $4056 - (2180 - 1375)$ | 18. $(4056 - 2180) + 1375$ |

Solving Problems in Two or More Steps

Sometimes it takes more than one step to solve a problem.

495 children at Macdonald School and 347 children at Laurier School had to have booster shots. The nurses gave 516 shots on Monday. How many children still had to have booster shots?



$$\begin{array}{r} \text{Add.} \quad \begin{array}{r} 11 \\ 495 \\ 347 \\ \hline 842 \end{array} \\ 842 \text{ children in all.} \end{array}$$

$$\begin{array}{r} \text{Subtract.} \quad \begin{array}{r} 312 \\ 842 \\ 516 \\ \hline 326 \end{array} \\ 326 \text{ still need shots.} \end{array}$$

Solve. Show the steps for each problem.

1. On Monday the nurses gave shots to 218 of the 347 children at Laurier School. On Tuesday they gave shots to 121 more. How many children at Laurier School still needed shots?
2. There were 286 patients in the hospital yesterday. 35 were admitted last night. 62 were released today and 49 more were admitted. Now how many are in the hospital?
3. One doctor worked 102 h (hours) one week. She spent 35 h in the office, 58 h in the hospital, and the rest of the time on home visits. How many hours did she spend on home visits that week?
4. The doctor's fee for Ron's baby sister was \$235. The hospital costs were \$875. Insurance paid \$875 for the hospital and \$200 for the doctor. How much did Ron's parents have to pay?
5. The doctor's fee was \$75 for taking out Ron's tonsils. The hospital bill was \$175. Insurance paid \$189. How much did Ron's parents have to pay?
6. One day the Blood Centre had 1204 units of blood. It sent 378 units to one hospital and 548 to another. It received 762 units on a blood drive. How many units did it have at the end of the day?

**PROBLEM
SOLVING**

Checking Up

Subtract.

- | | | | | |
|---|---|---|---|---|
| 1. $\begin{array}{r} 59 \\ 31 \\ \hline \end{array}$ | 2. $\begin{array}{r} 775 \\ 421 \\ \hline \end{array}$ | 3. $\begin{array}{r} 6347 \\ 5041 \\ \hline \end{array}$ | 4. $\begin{array}{r} 64 \\ 26 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$283 \\ 39 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 3694 \\ 1178 \\ \hline \end{array}$ | 7. $\begin{array}{r} 126 \\ 54 \\ \hline \end{array}$ | 8. $\begin{array}{r} 987 \\ 295 \\ \hline \end{array}$ | 9. $\begin{array}{r} 6963 \\ 2572 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$3488 \\ 2734 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 5268 \\ 731 \\ \hline \end{array}$ | 12. $\begin{array}{r} 5084 \\ 1663 \\ \hline \end{array}$ | 13. $\begin{array}{r} 223 \\ 64 \\ \hline \end{array}$ | 14. $\begin{array}{r} 522 \\ 236 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$5620 \\ 4047 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 3183 \\ 1565 \\ \hline \end{array}$ | 17. $\begin{array}{r} 1574 \\ 909 \\ \hline \end{array}$ | 18. $\begin{array}{r} 8260 \\ 3458 \\ \hline \end{array}$ | 19. $\begin{array}{r} 2117 \\ 1171 \\ \hline \end{array}$ | 20. $\begin{array}{r} \$8716 \\ 923 \\ \hline \end{array}$ |
| 21. $\begin{array}{r} 7119 \\ 4493 \\ \hline \end{array}$ | 22. $\begin{array}{r} 4437 \\ 3798 \\ \hline \end{array}$ | 23. $\begin{array}{r} 8232 \\ 4867 \\ \hline \end{array}$ | 24. $\begin{array}{r} 3214 \\ 436 \\ \hline \end{array}$ | 25. $\begin{array}{r} \$6324 \\ 3578 \\ \hline \end{array}$ |
| 26. $\begin{array}{r} 9000 \\ 5835 \\ \hline \end{array}$ | 27. $\begin{array}{r} 1004 \\ 265 \\ \hline \end{array}$ | 28. $\begin{array}{r} 4006 \\ 526 \\ \hline \end{array}$ | 29. $\begin{array}{r} 6062 \\ 4763 \\ \hline \end{array}$ | 30. $\begin{array}{r} \$5029 \\ 2487 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} 2086 \\ 198 \\ \hline \end{array}$ | 32. $\begin{array}{r} 903 \\ 806 \\ \hline \end{array}$ | 33. $\begin{array}{r} 9603 \\ 4798 \\ \hline \end{array}$ | 34. $\begin{array}{r} 1305 \\ 247 \\ \hline \end{array}$ | 35. $\begin{array}{r} \$7005 \\ 2968 \\ \hline \end{array}$ |

Add or subtract as shown.

- | | |
|----------------------------|---------------------------|
| 36. $(348 + 757) - 285$ | 37. $(500 - 274) + 894$ |
| 38. $1361 + (714 - 75)$ | 39. $(2022 - 975) - 548$ |
| 40. $6413 - (2895 + 1839)$ | 41. $3207 - (2000 - 641)$ |
-
- | | |
|---|--|
| 42. The bicycle shop ordered 1112 bicycles last year. It sold 1074. How many did it have left in stock? | 43. The bicycle shop sold 1074 bicycles last year. 375 have already needed repairs. How many have not needed repairs? |
| 44. The bicycle shop has sold 698 bicycles this year. Last year it sold 1074. How many fewer has it sold this year? | 45. One basic model bicycle costs \$75.59. Fully equipped it costs \$94.00. How much more does it cost fully equipped? |

4 GEOMETRY

Line Symmetry

The "water line" separates this picture into two parts that are alike.

The picture has **line symmetry**.

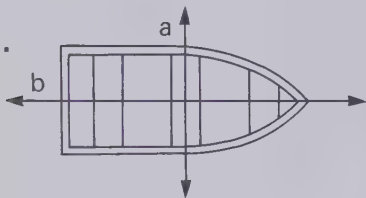
A line that separates a picture into two parts that are alike is a **line of symmetry**.



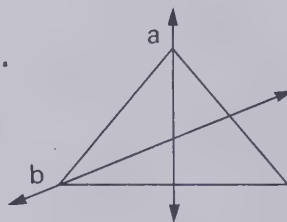
Working Together

Which is a line of symmetry?

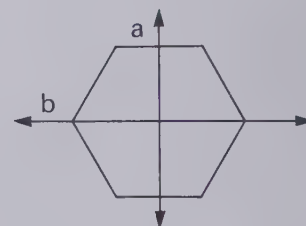
1.



2.



3.



Use tracing paper. Trace around each shape. Then sketch lines of symmetry.

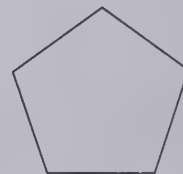
4.



5.

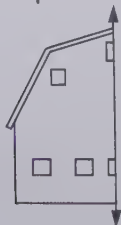


6.



The lines shown are lines of symmetry. Sketch the part of each picture shown. Then sketch the matching part to complete the shape.

7.



8.



A picture of each of these can have line symmetry. Draw a picture of each. Show a line of symmetry.

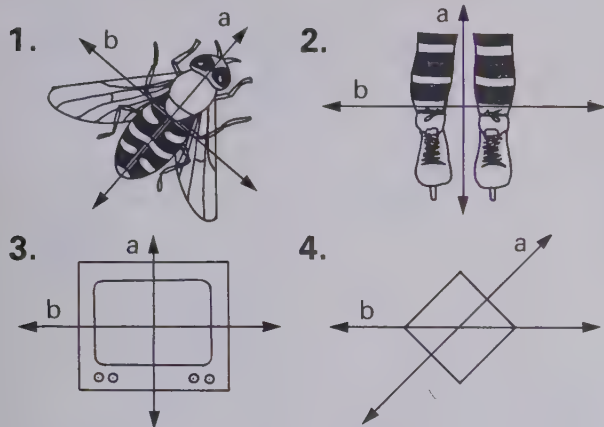
9. a broom

10. a car

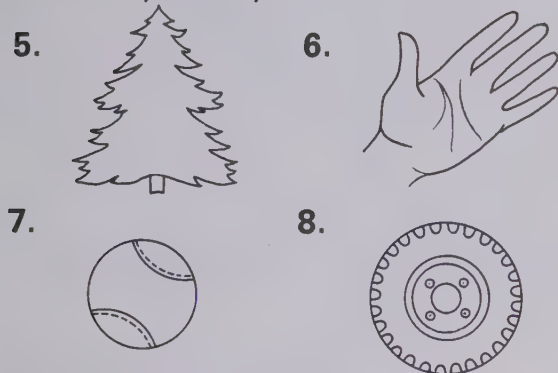
11. a rectangle

Exercises

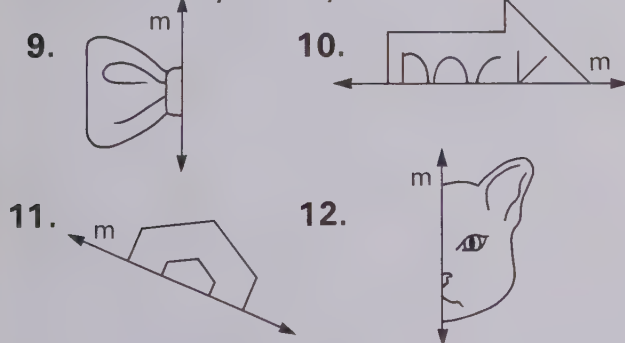
Which line is a line of symmetry?



Copy each picture that shows line symmetry. Then draw lines of symmetry.



Copy and complete each picture so that line m is a line of symmetry.



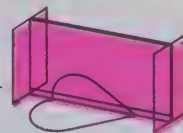
Draw a picture for each of these. Show a line of symmetry.

13. a square 14. a cake pan
15. your face 16. a light bulb

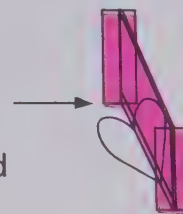
A shape and its reflection in a mirror suggest line symmetry.



A shape and its reflection in the Mira™ can help you check for line symmetry.



Look through this side. Carefully move the Mira and try to match the reflection with the part of the shape on the other side.



- Find some pictures that suggest line symmetry. Check for line symmetry using the Mira.

A shape and its reflection in the Mira can help you draw shapes that have line symmetry.

Look through this side. On the other side, draw the part of the shape suggested by the reflection.



- Sketch a shape like this. Use the Mira along the line to help you complete a shape having line symmetry.



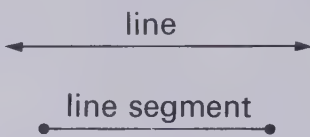
Lines and Line Segments

Can Roger (R) go *straight* to the cookie jar (C)?

A straight edge placed between Roger and the cookie jar will touch nothing else in the home.

Roger and the cookie jar are in line.

A **line** is a straight path that continues without end.

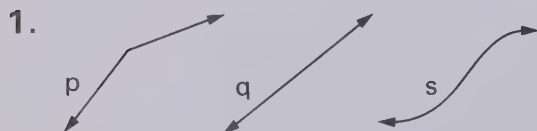


Roger's path to the cookie jar suggests part of a line known as a **line segment**.

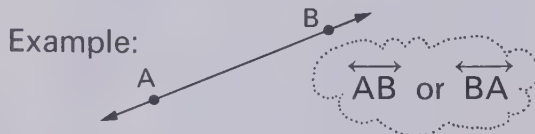
A line segment is a straight path that connects two points.

Working Together

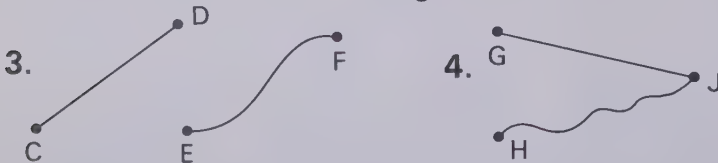
Which shows a line, p, q, or s?



A line is named by naming two of its points in either order.



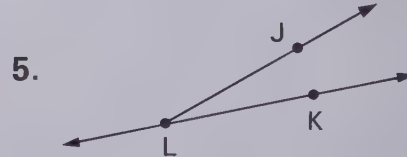
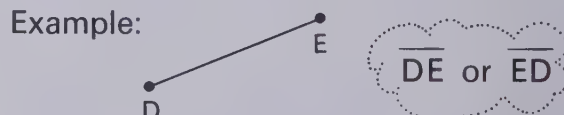
Name each line or line segment.



Which shows a line segment, R to S, S to T, or T to U?



A line segment is named by naming its **end points**.

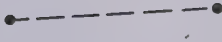





Use a straight edge to draw these. Label the points.



6. \overline{RS} ... line segment RS
7. \overleftrightarrow{MN} ... line MN

Exercises

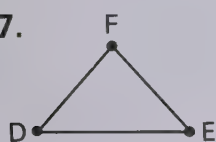
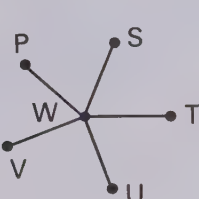
Is it or is it not

1. a line segment? 
2. line segment BC? 
3. \overleftrightarrow{RQ} ? 
4. \overline{XY} ? 

Name all the lines shown.

5. 
6. 

Name all the line segments shown.

7. 
8. 

Draw and label these.

9. \overleftrightarrow{BC}
10. \overline{RS}
11. points X, Y, Z and then \overline{XY} , \overline{YZ} , \overline{ZX} .
12. the letters of the alphabet using only line segments



By following a straight path in Roger's home,

13. can Barky get to the dog dish (D)?
14. can anyone at the dining table see TV?
- *15. can Barky get to the dog blanket (B)?

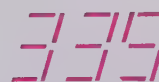
Some machines show digits that suggest line segments.




1. How many line segments make up each digit?



Turn this numeral upside down.



2. What word do you ?
3. What other digits show letters when turned upside down?
4. Using digits like those above, show a numeral that gives a word when turned upside down.

Do these. Write each result using digits like those above. What word will show when each result is turned over?

5. $310 - 296$
6. $338 + 177$
7. $6019 - 1979$

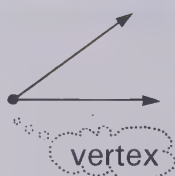
**try
this**

Angles



Parts of the lines suggested by the floor and staircase form an **angle**.

An angle can be named by naming its **vertex**.



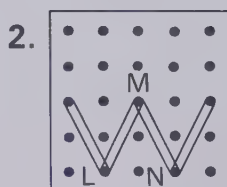
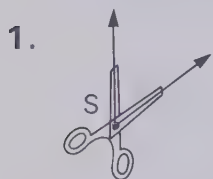
Angles that match square corners are **right angles**.



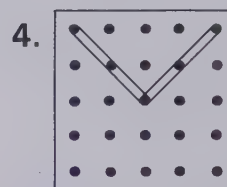
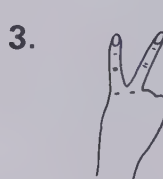
This right angle is angle P.

Working Together

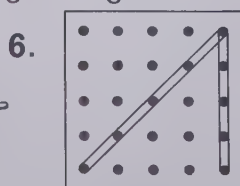
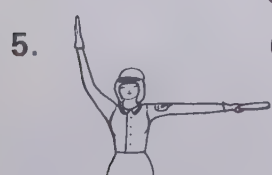
Name the angles suggested by each picture.



Use a square corner.
Test for right angles.



Which is larger and which is smaller than a right angle?



Draw and label these.

7. angle R
8. right angle S
9. an object that suggests an angle that is larger than a right angle

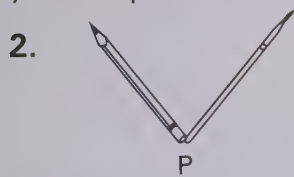


Exercises

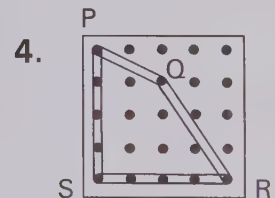
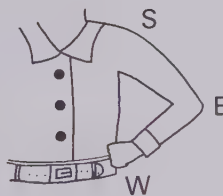
Think about the things in your home.

1. Make a list of objects that suggest angles.

How many angles are suggested by each picture? Name them.



3.



Draw and label these.

5. angle L
6. right angle T
7. angle S smaller than a right angle

Make a list of objects

8. that suggest right angles.
9. that suggest angles smaller than right angles.
10. that suggest angles larger than right angles.

Give one time when the hands on a clock

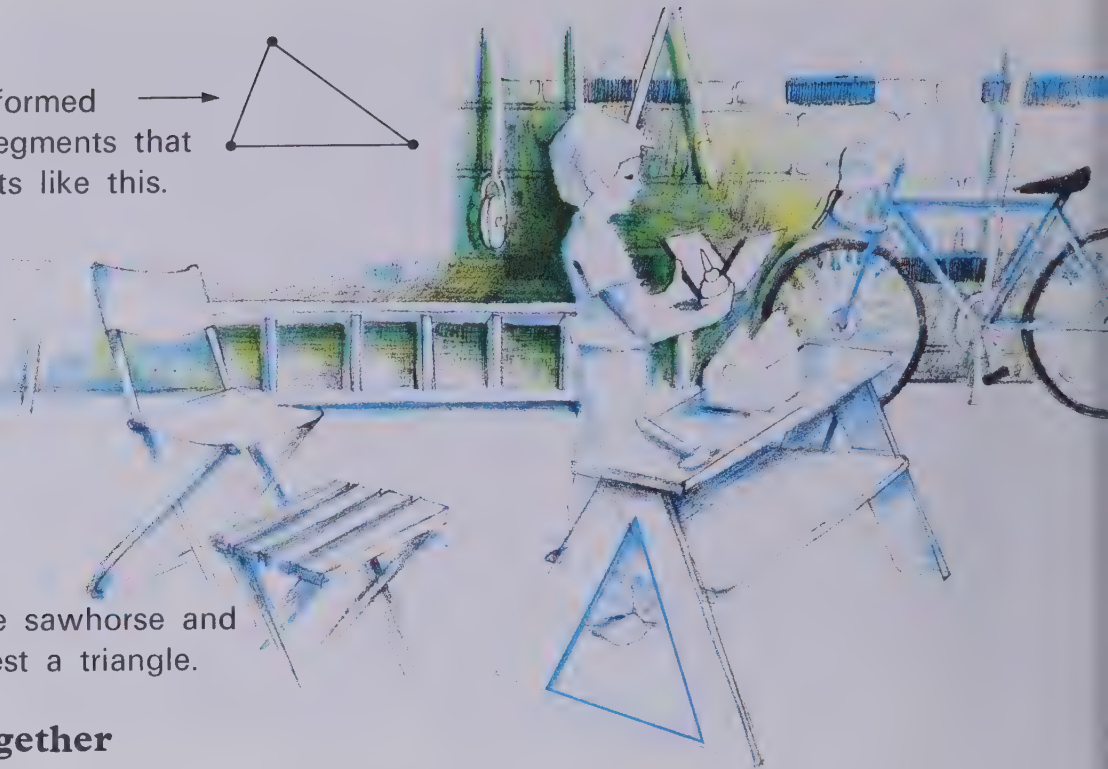
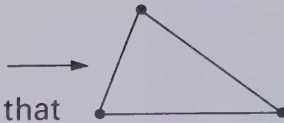
11. show a right angle.
12. show an angle larger than a right angle.

Use a toy clock to help you

- *13. tell how many times in 12 h the hands on a clock show a right angle.

Triangles

A **triangle** is formed by three line segments that share end points like this.

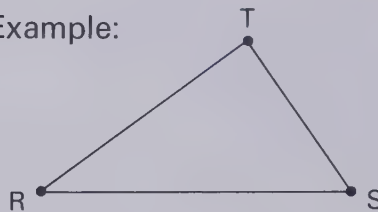


The legs of the sawhorse and the floor suggest a triangle.

Working Together

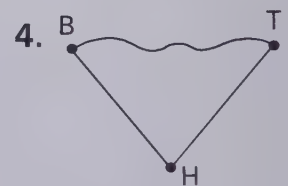
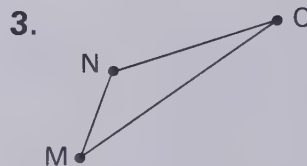
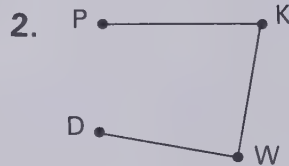
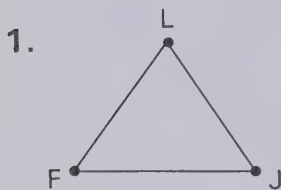
A triangle is named by naming its three **vertices** or corner points in any order.

Example:

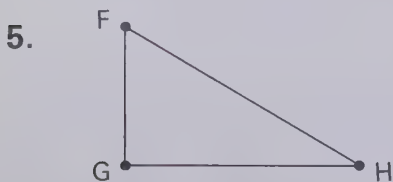


This is triangle RST. Another name for it is triangle SRT.

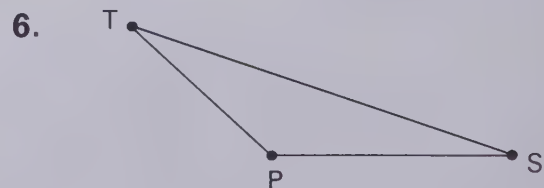
Name each triangle you see.



Each line segment in a triangle is a **side** of the triangle. Name the sides of this triangle.



The sides of a triangle suggest three angles. Name the three angles of this triangle.



Draw and label these.

7. triangle PQR

8. a triangle with sides BC, CD, and BD

9. a triangle with angles M, N, and P

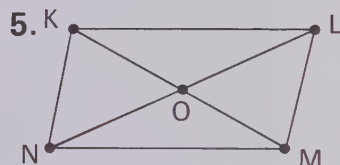
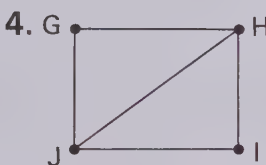
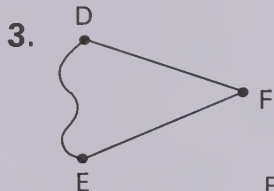
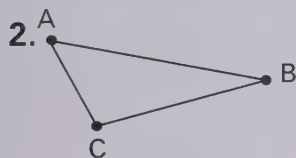


Exercises

Think about things you find in a garage.

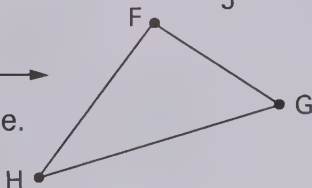
1. Make a list of objects that suggest triangles.

Name each triangle you see.



Triangle FGH is one name
for this triangle. \longrightarrow

Triangle GHF is another name.



For triangle FGH, name

6. Write a third name.
7. Can you think of more names?

8. the sides.
9. the angles.

Draw and label these.

10. triangle MNO

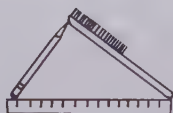
11. triangle XYZ and triangle XWZ

12. a triangle with sides RG and GK

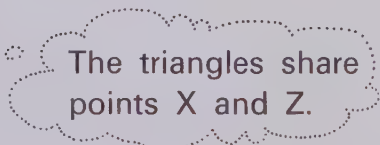
13. a triangle with angles L, V, and W

Find three straight objects.

14. Have a friend use them to suggest a triangle.

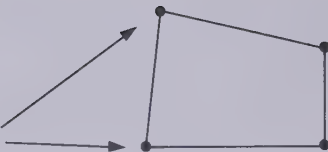


- *15. Can this be done for any three straight objects that you give your friend?



Polygons

A **polygon** is formed by line segments that share end points like this.



The line segments are the sides of the polygon.

A **triangle** is a polygon with 3 sides.



triangle

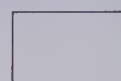
A **quadrilateral** is a polygon...



...with 4 sides.

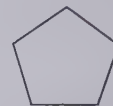


Rectangles and squares are special quadrilaterals.



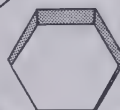
quadrilaterals

A **pentagon** is a polygon with 5 sides.



pentagon

A **hexagon** is a polygon with 6 sides.



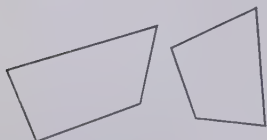
hexagon

An **octagon** is a polygon with 8 sides.



octagon

These also are polygons.



quadrilaterals



pentagons

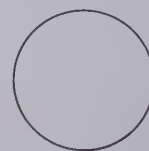
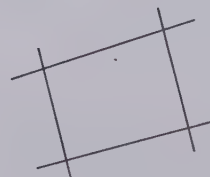


hexagons



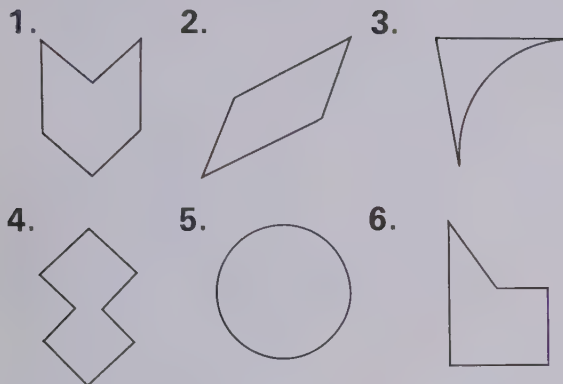
octagons

These are not polygons.



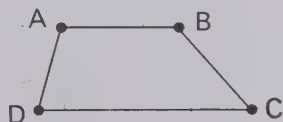
Exercises

Is it a polygon?
If so, give its name.



How many angles
are there for

7. a triangle? 8. a hexagon?
9. an octagon? 10. a pentagon?
11. this
 quadrilateral?



For quadrilateral ABCD above, name

12. the angles. 13. the sides.

Draw polygons that show these. If
a picture is not possible, say so.

14. 5 sides 15. 3 angles
16. 7 sides 17. 2 sides

List two objects that suggest

18. triangles.
19. quadrilaterals.
20. hexagons.

Draw a hexagon. How many
different triangles can you draw

- *21. using three vertices of the
hexagon as the vertices
of each triangle?

Add.

1. $\begin{array}{r} 31 \\ 14 \\ \hline \end{array}$	2. $\begin{array}{r} 223 \\ 35 \\ \hline \end{array}$	3. $\begin{array}{r} \$425 \\ 253 \\ \hline \end{array}$
4. $\begin{array}{r} 3570 \\ 108 \\ \hline \end{array}$	5. $\begin{array}{r} 3171 \\ 2327 \\ \hline \end{array}$	6. $\begin{array}{r} \$16.02 \\ 62.57 \\ \hline \end{array}$
7. $\begin{array}{r} 58 \\ 23 \\ \hline \end{array}$	8. $\begin{array}{r} 52 \\ 52 \\ \hline \end{array}$	9. $\begin{array}{r} \$472 \\ 184 \\ \hline \end{array}$
10. $\begin{array}{r} 905 \\ 434 \\ \hline \end{array}$	11. $\begin{array}{r} 7424 \\ 1419 \\ \hline \end{array}$	12. $\begin{array}{r} \$40.51 \\ 28.75 \\ \hline \end{array}$
13. $\begin{array}{r} 97 \\ 16 \\ \hline \end{array}$	14. $\begin{array}{r} 546 \\ 59 \\ \hline \end{array}$	15. $\begin{array}{r} \$623 \\ 639 \\ \hline \end{array}$
16. $\begin{array}{r} 573 \\ 646 \\ \hline \end{array}$	17. $\begin{array}{r} 1392 \\ 378 \\ \hline \end{array}$	18. $\begin{array}{r} \$24.86 \\ 58.41 \\ \hline \end{array}$
19. $\begin{array}{r} 6348 \\ 2807 \\ \hline \end{array}$	20. $\begin{array}{r} 6872 \\ 176 \\ \hline \end{array}$	21. $\begin{array}{r} \$1159 \\ 2187 \\ \hline \end{array}$
22. $\begin{array}{r} 984 \\ 87 \\ \hline \end{array}$	23. $\begin{array}{r} 987 \\ 355 \\ \hline \end{array}$	24. $\begin{array}{r} \$86.12 \\ 7.99 \\ \hline \end{array}$
25. $\begin{array}{r} 3568 \\ 4982 \\ \hline \end{array}$	26. $\begin{array}{r} 2677 \\ 493 \\ \hline \end{array}$	27. $\begin{array}{r} \$396 \\ 755 \\ \hline \end{array}$
28. $\begin{array}{r} 3964 \\ 2836 \\ \hline \end{array}$	29. $\begin{array}{r} 4899 \\ 3929 \\ \hline \end{array}$	30. $\begin{array}{r} \$58.86 \\ 36.78 \\ \hline \end{array}$
31. $\begin{array}{r} 436 \\ 12 \\ \hline 540 \end{array}$	32. $\begin{array}{r} 63 \\ 285 \\ \hline 3727 \end{array}$	33. $\begin{array}{r} \$1639 \\ 2525 \\ \hline \end{array}$
34. $\begin{array}{r} 2493 \\ 1965 \\ \hline 4572 \end{array}$	35. $\begin{array}{r} \$47.69 \\ 24.27 \\ \hline 18.18 \end{array}$	

**KEEPING
SHARP**

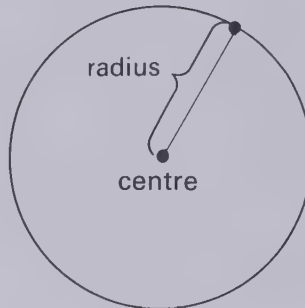
Circles

The cake pan has the shape of a **circle**. The blade is fastened to the pan at the **centre**. It suggests a **radius** of the circle.

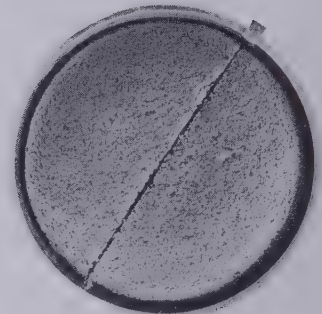


cake pan

A **diameter** of a circle is a line segment that contains the centre and has end points on the circle.

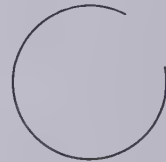
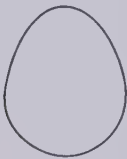


circle



This cake has been cut along a diameter.

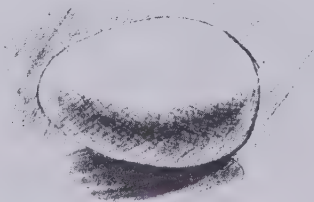
A circle is a special curved path. All the points of a circle are the same distance from the centre. Here are some curved paths that are not circles.



Working Together

Which objects suggest circles?

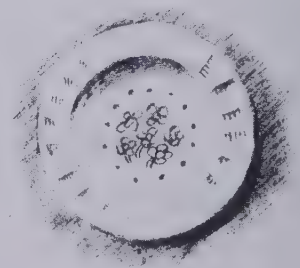
1.



2.



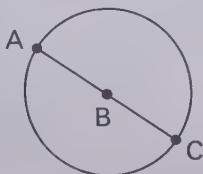
3.



Name

Draw

4. the centre, a radius, and a diameter of this circle.



5. a circle. Label its centre, a radius, and a diameter.
6. a circle with radius ST and diameter TV.
7. two circles that are the same size.



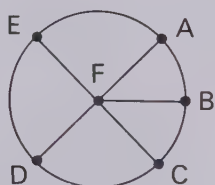
Exercises

Think about things you see in a kitchen.

1. Make a list of kitchen objects that suggest circles.

Name _____

2. the centre.
3. each radius.
4. each diameter.



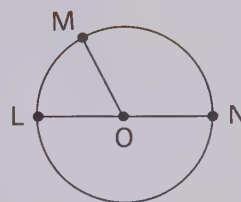
What is

5. \overline{MO} ?

6. \overline{LN} ?

7. O?

8. \overline{OL} ?



Can you draw a circle using something that is round, like a coin?

9. Try it.
10. What is special about all the circles that you draw using the same object?

Tie a string to make a loop.



Find a rubber band.

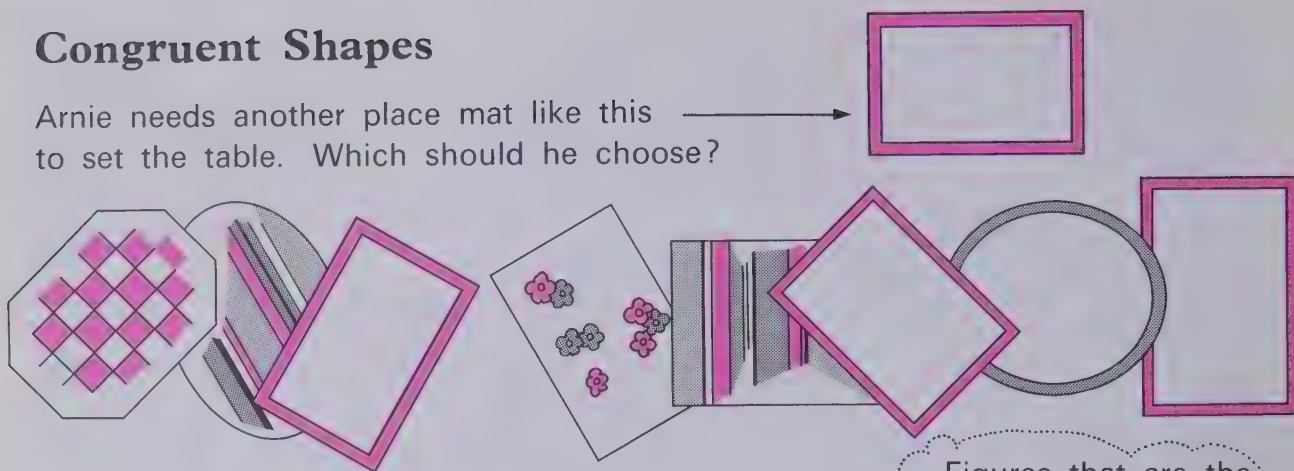


- *11. Try to draw a circle using your pencil and the loop.

- *12. Try to draw a circle using your pencil and the rubber band.

Congruent Shapes

Arnie needs another place mat like this → to set the table. Which should he choose?



Use tracing paper to find another place mat that is the same size and shape as Arnie's place mat.

Figures that are the same size and shape are **congruent**.

Working Together

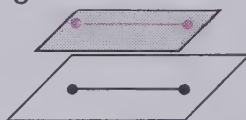
Use tracing paper to find the congruent line segments.

Example:

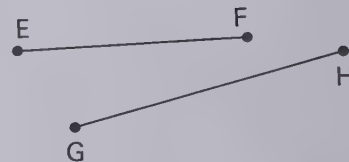
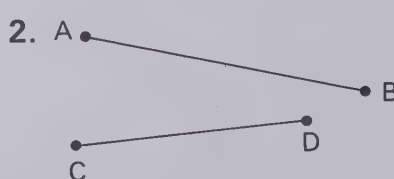
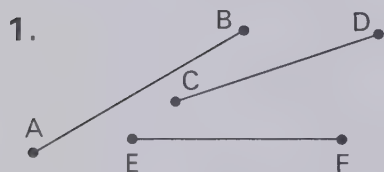
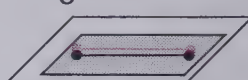
Trace one line segment.



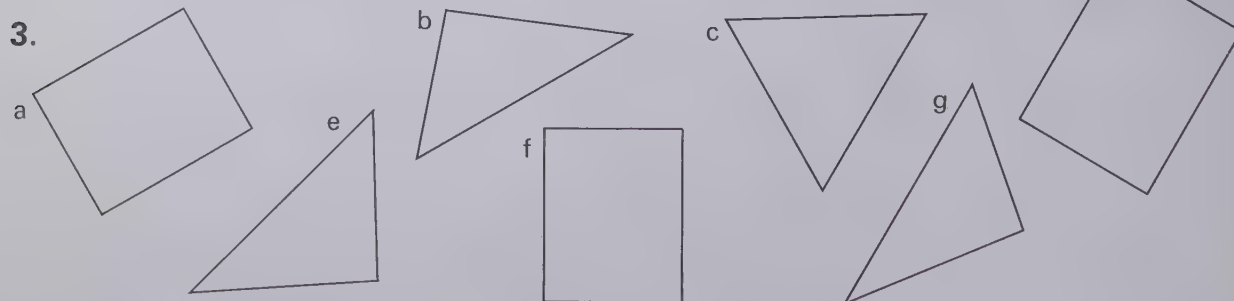
Place the tracing over another line segment.



They match. The two line segments are congruent.

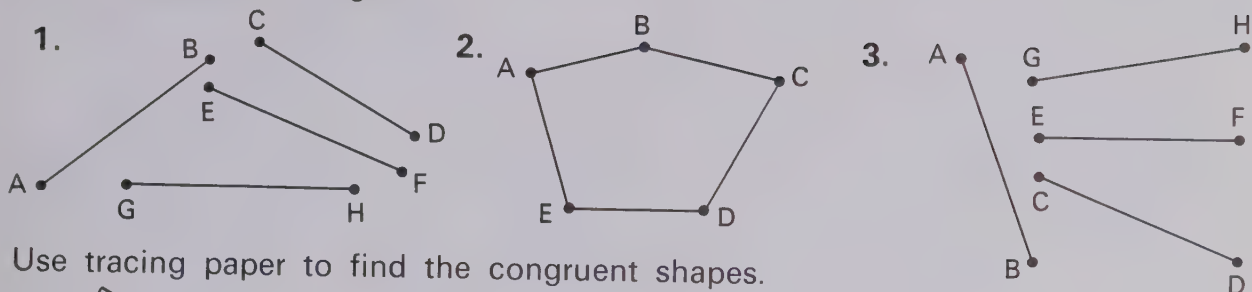


Use tracing paper to find two pairs of congruent shapes.

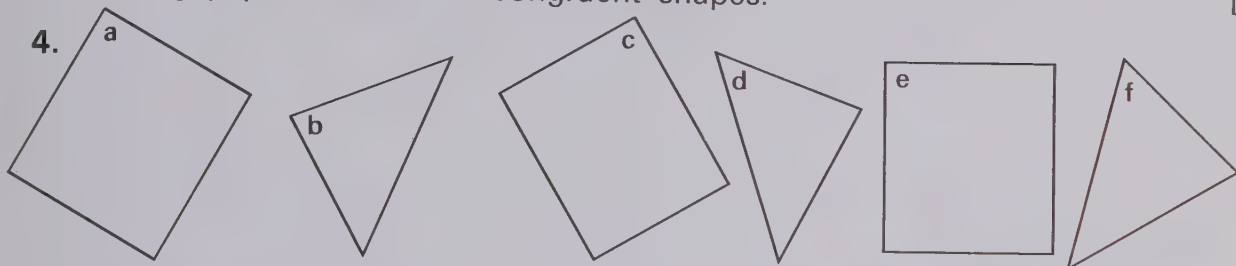


Exercises

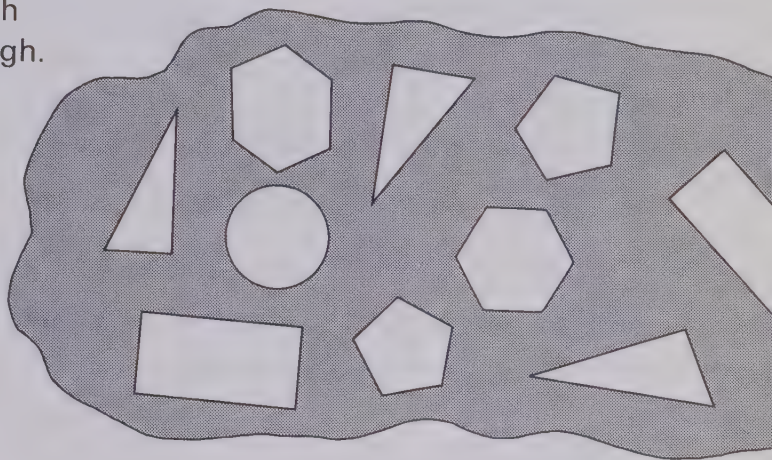
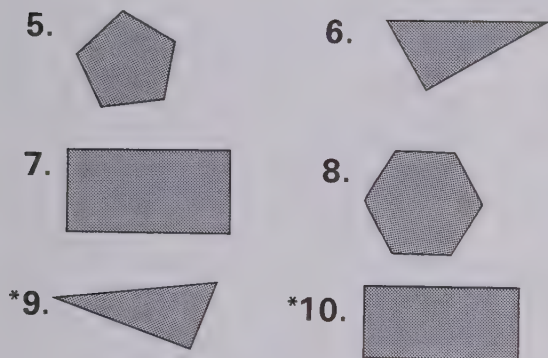
Use tracing paper to find the congruent line segments.



Use tracing paper to find the congruent shapes.

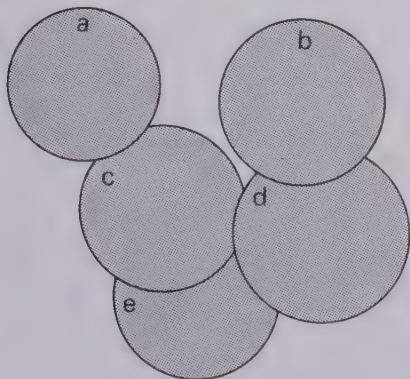


Use tracing paper to help you match each cookie with a hole in the dough.

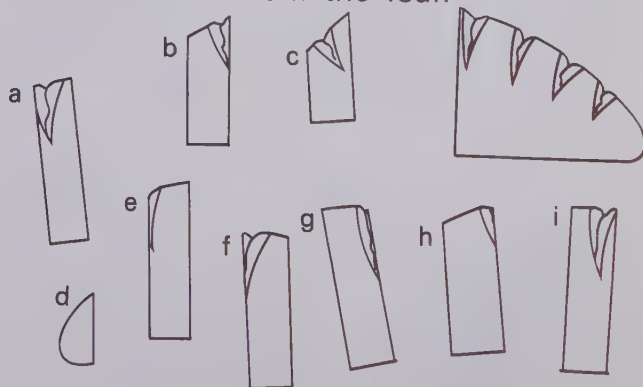


Use tracing paper to help you tell

11. which cookies came from the same cutter.



12. which slice of bread was last cut from the loaf.

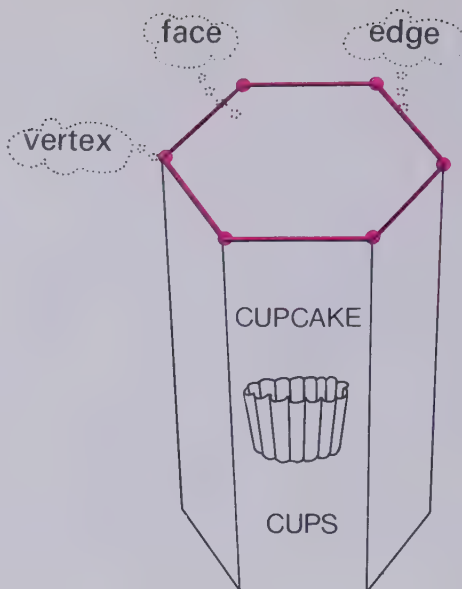


Solids

A **vertex** of this solid is a corner point.

An **edge** of this solid is a line segment.

A **face** of this solid has the shape of a polygon.



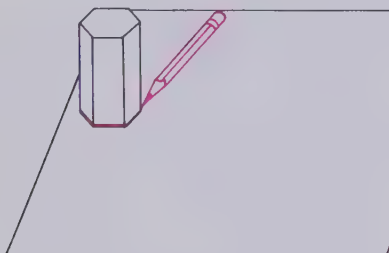
This solid has 12 vertices.

It has 18 edges.

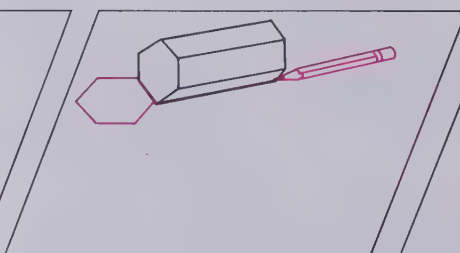
It has 8 faces.

2 faces suggest hexagons. 6 faces suggest rectangles.

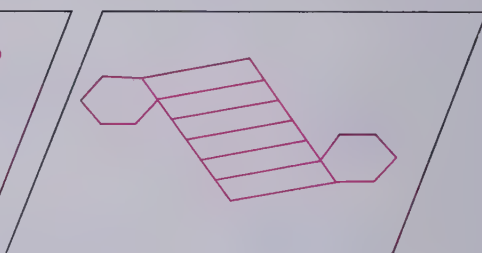
Trace around one face of a solid and get a picture of its shape.



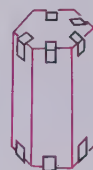
Then turn the solid and trace around again.



Trace around each of the 8 faces and get a pattern for the solid.



Cut out the pattern. Then fold and tape it to make a copy of the solid.



Working Together

How many vertices, edges, and faces for each of these?

1.



2.



Match the solid with its pattern.

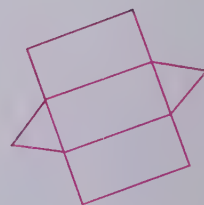
3.



a.



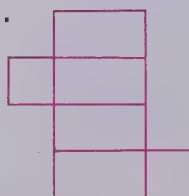
b.



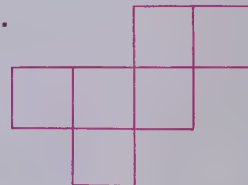
4.



a.







b.



Exercises

Copy and complete the chart.

		Number of		
		vertices	edges	faces
1.				
2.				
3.	 square on the bottom			
4.				

Describe the faces of each solid.

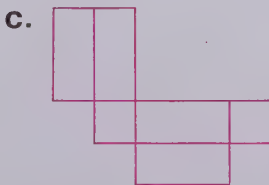
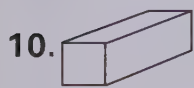
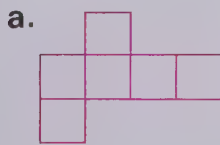
Example:



2 pentagons
5 rectangles



Match each solid with its pattern.



Subtract.

1.
$$\begin{array}{r} 59 \\ - 34 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 347 \\ - 17 \\ \hline \end{array}$$

3.
$$\begin{array}{r} \$586 \\ - 213 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 5756 \\ - 302 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 8872 \\ - 6151 \\ \hline \end{array}$$

6.
$$\begin{array}{r} \$84.89 \\ - 32.07 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 64 \\ - 38 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 527 \\ - 92 \\ \hline \end{array}$$

9.
$$\begin{array}{r} \$562 \\ - 426 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 506 \\ - 184 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 1298 \\ - 547 \\ \hline \end{array}$$

12.
$$\begin{array}{r} \$54.78 \\ - 52.83 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 712 \\ - 39 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 994 \\ - 497 \\ \hline \end{array}$$

15.
$$\begin{array}{r} \$1307 \\ - 410 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 7368 \\ - 5792 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 3390 \\ - 566 \\ \hline \end{array}$$

18.
$$\begin{array}{r} \$79.53 \\ - 15.96 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 1775 \\ - 187 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 4115 \\ - 3571 \\ \hline \end{array}$$

21.
$$\begin{array}{r} \$8492 \\ - 6685 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 1222 \\ - 283 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 8131 \\ - 3276 \\ \hline \end{array}$$

24.
$$\begin{array}{r} \$45.81 \\ - 8.95 \\ \hline \end{array}$$

25.
$$\begin{array}{r} 5640 \\ - 2899 \\ \hline \end{array}$$

26.
$$\begin{array}{r} 2221 \\ - 534 \\ \hline \end{array}$$

27.
$$\begin{array}{r} \$7274 \\ - 6976 \\ \hline \end{array}$$

28.
$$\begin{array}{r} 8444 \\ - 4765 \\ \hline \end{array}$$

29.
$$\begin{array}{r} 2215 \\ - 1746 \\ \hline \end{array}$$

30.
$$\begin{array}{r} \$82.12 \\ - 48.24 \\ \hline \end{array}$$

31.
$$\begin{array}{r} 2503 \\ - 358 \\ \hline \end{array}$$

32.
$$\begin{array}{r} 7003 \\ - 2214 \\ \hline \end{array}$$

33.
$$\begin{array}{r} \$4054 \\ - 1393 \\ \hline \end{array}$$

34.
$$\begin{array}{r} 5040 \\ - 4857 \\ \hline \end{array}$$

35.
$$\begin{array}{r} \$70.00 \\ - 36.03 \\ \hline \end{array}$$

36.
$$\begin{array}{r} \$83.05 \\ - 56.97 \\ \hline \end{array}$$

KEEPING SHARP

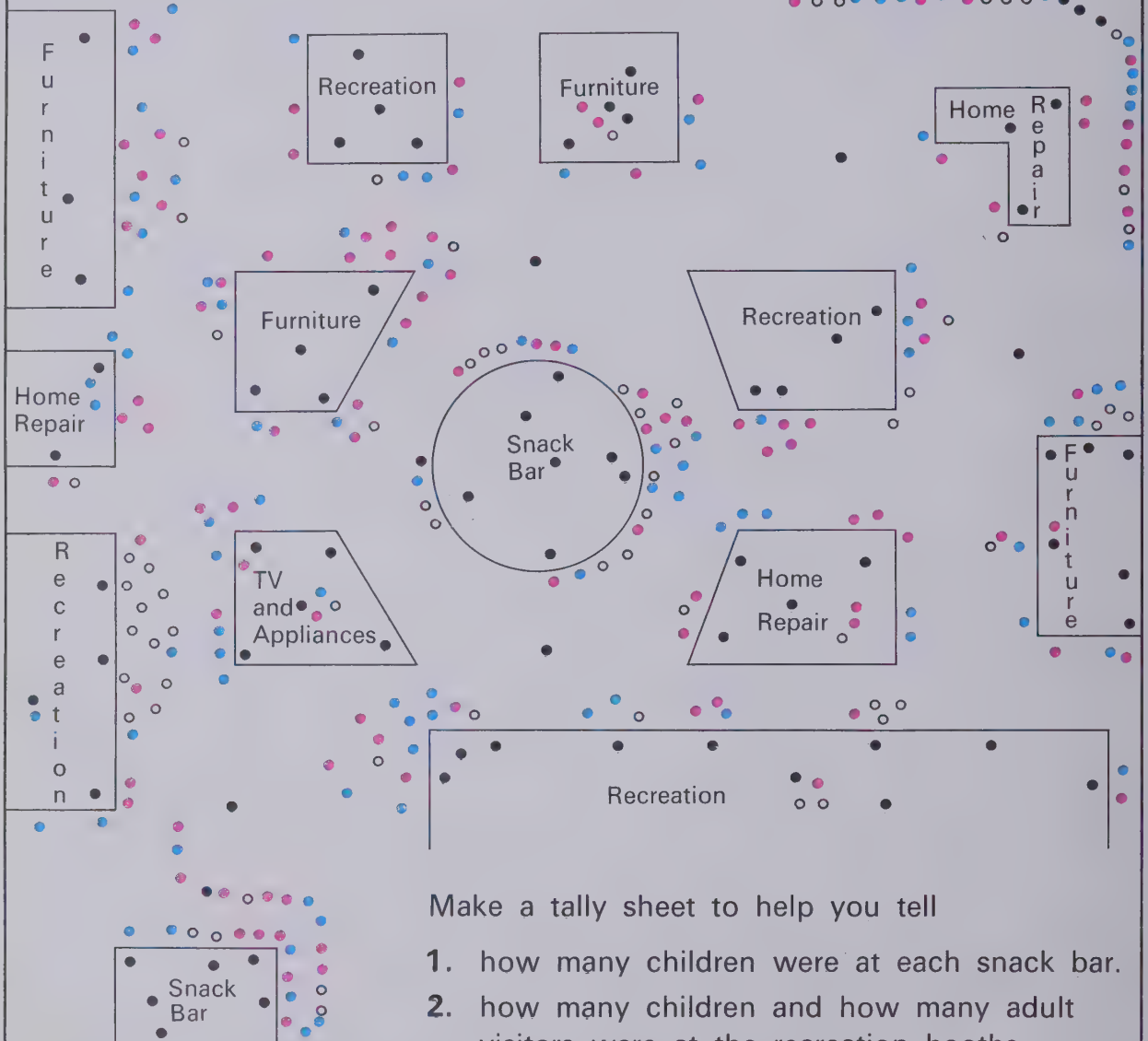
Organizing Data

The black dots stand for workers.
The other dots stand for visitors at the Home Show.

● — woman

● — man

○ — child



PROBLEM SOLVING

Make a tally sheet to help you tell

1. how many children were at each snack bar.
2. how many children and how many adult visitors were at the recreation booths.

What other questions could be asked about the people at the Home Show?

3. Give your questions to classmates for tallying and answering.

Checking Up

From the list, choose the one idea that *best* matches each picture.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.

line symmetry
line segment
line
angle
right angle
triangle
polygon
hexagon
circle
square faces

Name each of these.

- 13.
- 14.
- 15.
- 16.
- 17.
- 18.

Draw a picture for each of these.

19. \overleftrightarrow{XY}
21. a polygon with 5 sides
23. a circle with diameter AB
25. a quadrilateral
27. a polygon showing 4 angles
20. a circle with center C
22. angle A
24. one face of this solid
26. a circle with radius PQ
28. a triangle with sides RS, TS, TR

Which line segments are congruent?

- 29.

Which shapes are congruent?

- 30.

Checking Skills

Add.

$$\begin{array}{r} 1. \quad 45 \\ \quad 24 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 131 \\ \quad \quad 56 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 452 \\ \quad \quad 102 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 713 \\ \quad 142 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 3062 \\ \quad \quad 226 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 1541 \\ \quad \quad 52 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 2245 \\ \quad 3122 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 1354 \\ \quad 4333 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 3172 \\ \quad 1725 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 17 \\ \quad 34 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 92 \\ \quad 63 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 251 \\ \quad 658 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 623 \\ \quad 870 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 3613 \\ \quad \quad 318 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 6445 \\ \quad 1493 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 2858 \\ \quad 711 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 2306 \\ \quad 4446 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 1843 \\ \quad 5242 \\ \hline \end{array}$$

Subtract.

$$\begin{array}{r} 19. \quad 49 \\ \quad 24 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 387 \\ \quad \quad 36 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 857 \\ \quad 552 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 124 \\ \quad 114 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 5678 \\ \quad \quad 337 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad 4595 \\ \quad 2461 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 2678 \\ \quad 254 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 2743 \\ \quad 2131 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad 9349 \\ \quad 1208 \\ \hline \end{array}$$

$$\begin{array}{r} 28. \quad 84 \\ \quad 38 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \quad 108 \\ \quad \quad 12 \\ \hline \end{array}$$

$$\begin{array}{r} 30. \quad 993 \\ \quad 765 \\ \hline \end{array}$$

$$\begin{array}{r} 31. \quad 716 \\ \quad 164 \\ \hline \end{array}$$

$$\begin{array}{r} 32. \quad 1666 \\ \quad \quad 629 \\ \hline \end{array}$$

$$\begin{array}{r} 33. \quad 9079 \\ \quad 1345 \\ \hline \end{array}$$

$$\begin{array}{r} 34. \quad 5725 \\ \quad 4183 \\ \hline \end{array}$$

$$\begin{array}{r} 35. \quad 1146 \\ \quad \quad 512 \\ \hline \end{array}$$

$$\begin{array}{r} 36. \quad 4656 \\ \quad 3735 \\ \hline \end{array}$$

Add.

$$\begin{array}{r} 1. \quad 94 \\ \quad 17 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 278 \\ \quad \quad 57 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 249 \\ \quad 458 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 538 \\ \quad 916 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 735 \\ \quad 372 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 4537 \\ \quad \quad 739 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 3596 \\ \quad 4107 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 4528 \\ \quad 3653 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 2684 \\ \quad 2581 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 927 \\ \quad \quad 97 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 978 \\ \quad 224 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 1947 \\ \quad \quad 966 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 6926 \\ \quad \quad 589 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 3695 \\ \quad 5638 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 2186 \\ \quad 1854 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 3148 \\ \quad \quad 989 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 1609 \\ \quad 3894 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 6973 \\ \quad 1789 \\ \hline \end{array}$$

Subtract.

$$\begin{array}{r} 19. \quad 322 \\ \quad \quad 95 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 742 \\ \quad 383 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 1609 \\ \quad \quad 652 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 9842 \\ \quad 3776 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 2391 \\ \quad \quad 453 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad 5847 \\ \quad 3972 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 3670 \\ \quad \quad 274 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 9119 \\ \quad 3879 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad 7281 \\ \quad 4912 \\ \hline \end{array}$$

$$\begin{array}{r} 28. \quad 5134 \\ \quad \quad 949 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \quad 8864 \\ \quad 4895 \\ \hline \end{array}$$

$$\begin{array}{r} 30. \quad 6420 \\ \quad 1582 \\ \hline \end{array}$$

$$\begin{array}{r} 31. \quad 4264 \\ \quad 2686 \\ \hline \end{array}$$

$$\begin{array}{r} 32. \quad 1725 \\ \quad \quad 957 \\ \hline \end{array}$$

$$\begin{array}{r} 33. \quad 4148 \\ \quad 1769 \\ \hline \end{array}$$

$$\begin{array}{r} 34. \quad 1156 \\ \quad \quad 388 \\ \hline \end{array}$$

$$\begin{array}{r} 35. \quad 5130 \\ \quad 1671 \\ \hline \end{array}$$

$$\begin{array}{r} 36. \quad 3233 \\ \quad 2489 \\ \hline \end{array}$$

Add.

- | | | |
|---|---|---|
| 1. $\begin{array}{r} 1349 \\ 26 \\ \hline 502 \end{array}$ | 2. $\begin{array}{r} 1296 \\ 2202 \\ \hline 797 \end{array}$ | 3. $\begin{array}{r} 907 \\ 336 \\ \hline 2567 \end{array}$ |
| 4. $\begin{array}{r} 1872 \\ 1171 \\ \hline 2958 \end{array}$ | 5. $\begin{array}{r} 3269 \\ 268 \\ \hline 1686 \end{array}$ | 6. $\begin{array}{r} 2875 \\ 2668 \\ \hline 2829 \end{array}$ |
| 7. $\begin{array}{r} \$348 \\ 245 \\ \hline \end{array}$ | 8. $\begin{array}{r} \$4397 \\ 830 \\ \hline \end{array}$ | 9. $\begin{array}{r} \$4955 \\ 2775 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} \$21.96 \\ 5.62 \\ \hline \end{array}$ | 11. $\begin{array}{r} \$12.67 \\ 63.37 \\ \hline \end{array}$ | 12. $\begin{array}{r} \$18.84 \\ 29.29 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} \$10.25 \\ 1.79 \\ \hline 0.43 \end{array}$ | 14. $\begin{array}{r} \$ 6.38 \\ 25.26 \\ \hline 23.56 \end{array}$ | 15. $\begin{array}{r} \$33.97 \\ 17.48 \\ \hline 12.59 \end{array}$ |

Subtract.

- | | | |
|--|---|---|
| 16. $\begin{array}{r} 900 \\ 468 \\ \hline \end{array}$ | 17. $\begin{array}{r} 3038 \\ 572 \\ \hline \end{array}$ | 18. $\begin{array}{r} 7604 \\ 5256 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 1021 \\ 672 \\ \hline \end{array}$ | 20. $\begin{array}{r} 6000 \\ 3926 \\ \hline \end{array}$ | 21. $\begin{array}{r} 2700 \\ 884 \\ \hline \end{array}$ |
| 22. $\begin{array}{r} 7040 \\ 1085 \\ \hline \end{array}$ | 23. $\begin{array}{r} 7305 \\ 2628 \\ \hline \end{array}$ | 24. $\begin{array}{r} 6001 \\ 5813 \\ \hline \end{array}$ |
| 25. $\begin{array}{r} \$482 \\ 237 \\ \hline \end{array}$ | 26. $\begin{array}{r} \$3712 \\ 579 \\ \hline \end{array}$ | 27. $\begin{array}{r} \$9543 \\ 1946 \\ \hline \end{array}$ |
| 28. $\begin{array}{r} \$8.17 \\ 6.44 \\ \hline \end{array}$ | 29. $\begin{array}{r} \$33.58 \\ 15.76 \\ \hline \end{array}$ | 30. $\begin{array}{r} \$52.37 \\ 18.48 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} \$10.00 \\ 3.02 \\ \hline \end{array}$ | 32. $\begin{array}{r} \$90.80 \\ 37.93 \\ \hline \end{array}$ | 33. $\begin{array}{r} \$46.00 \\ 26.41 \\ \hline \end{array}$ |

Solve.

- Roger said that in one year he left the house 1825 times by the front door and 1095 times by the back door. How many times is this in all?
- The box of thumb tacks showed that it held 550. Teri counted 89 tacks in the box. How many thumb tacks had been used from the box?
- Sam's parents spent \$1675 for a car and \$369 for a trailer. How much did they spend in all?
- Rick said that he spent 517 h watching TV last year. Judy said that she spent 472 h. If they are correct, how many more hours did Rick watch TV?
- Jim charged \$1.85 for mowing and \$2.25 for raking a lawn. How much did he charge in all?
- Kay's parents drove 1014 km on a trip. The trip home was 886 km. How much less did they drive coming home?
- Selby had saved \$227 in her bank account. She used \$118 for a new bicycle. How much did she have left?
- One bag contained 675 nails. Another held 390 and a third had 288. How many nails were in the three bags?
- Rona received \$30.00 on her birthday. She spent \$22.75. How much did she not spend?

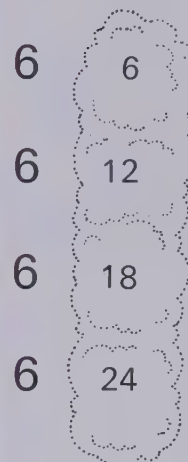
5 MULTIPLICATION

Basic Facts, One Factor to 5

How many cans are in this array?



Add, or count,
4 sixes.



Multiply.

$$\begin{array}{r} 6 \\ 4 \\ \hline 24 \end{array} \quad \begin{array}{r} 4 \\ 6 \\ \hline 24 \end{array}$$

Add, $4 + 4 + 4 + 4 + 4 + 4 = 24$

or
count,
6 fours.



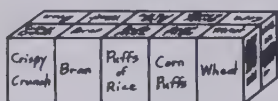
$$4 \times 6 = 24$$

$$6 \times 4 = 24$$

There are 24 cans in this array.

Working Together

Complete.



1. $2 + 2 + 2 + 2 + 2 =$

$5 \times 2 =$

3. $6 + 6 + 6 =$

$3 \times 6 =$



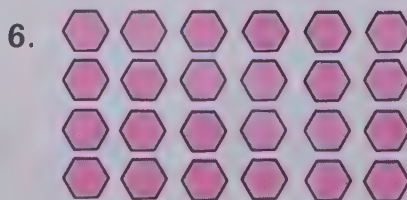
2. $3 + 3 + 3 + 3 =$

$4 \times 3 =$

4. $1 + 1 + 1 + 1 + 1 + 1 =$

$6 \times 1 =$

Give two addition sentences and
two multiplication sentences for each array.



Draw arrays to match each of these. Give two addition sentences and two multiplication sentences to match each array.

8. 9. 10.

rows	5	3	6
columns	4	2	5

Draw an array and write an addition sentence for each of these. Then complete each multiplication.

11. 5×3 12. 8×1 13. 3×3

Multiply.

14. $\begin{array}{r} 3 \\ 7 \end{array}$ 15. $\begin{array}{r} 4 \\ 1 \end{array}$ 16. $\begin{array}{r} 4 \\ 4 \end{array}$

Exercises

Write two addition sentences and two multiplication sentences for each of these.



Write a multiplication sentence to answer each question.

- 4 rows of red boxes. 3 in each row. How many boxes?
- 2 stacks of gold boxes. 3 in each stack. How many boxes?
- 5 rows of yellow boxes. 5 in each row. How many boxes?

Multiply.

8. 4×5 9. 9×2 10. 5×8
 11. 3×9 12. 5×7 13. 6×3
 14. 7×4 15. 8×5 16. 5×5
 17. 8×3 18. 5×1 19. 4×7
 20. $\begin{array}{r} 3 \\ 2 \end{array}$ 21. $\begin{array}{r} 9 \\ 4 \end{array}$ 22. $\begin{array}{r} 2 \\ 6 \end{array}$ 23. $\begin{array}{r} 2 \\ 2 \end{array}$
 24. $\begin{array}{r} 2 \\ 7 \end{array}$ 25. $\begin{array}{r} 9 \\ 1 \end{array}$ 26. $\begin{array}{r} 5 \\ 9 \end{array}$ 27. $\begin{array}{r} 4 \\ 3 \end{array}$

Finding Products with Factors from 0 to 9

How many olives are there?

How many olives are whole?



Multiply.

$$\begin{array}{r} 9 \\ 9 \\ \hline \end{array}$$

Add,
or
count,
9 nines.

$$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = 81$$

9 18 27 36 45 54 63 72 81

7 nines are 63.
 $7 \times 9 = 63$

9 nines are 81.
 $9 \times 9 = 81$

The **product** of the **factors**
7 and 9 is 63.

The product of the factors
9 and 9 is 81.

There are 81 olives.
63 olives are whole.

Working Together

Give two addition sentences and two multiplication sentences for each of these. Cover parts of the array of olives with paper to help you if needed.

1. the product of 3 and 7
2. the product of 8 and 6

Find each product. Use paper on the array of olives to help you if needed.

3. 9×7
4. 7×1

$$\begin{array}{r} 9 \\ 8 \end{array}$$

$$\begin{array}{r} 6 \\ 7 \end{array}$$

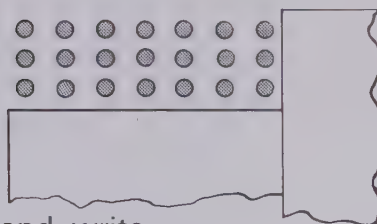
$$\begin{array}{r} 0 \\ 5 \end{array}$$

0 in each row ...
0 in all.

$$\begin{array}{r} 4 \\ 0 \end{array}$$

0 rows ...
0 in all.

Example: For the product of 3 and 7, cover the olives like this,



and write

$$3 + 3 + 3 + 3 + 3 + 3 + 3 = 21$$

$$7 + 7 + 7 = 21$$

$$7 \times 3 = 21$$

$$3 \times 7 = 21$$

Exercises


Find each product. Cover parts of the array of olives with paper to help you if needed.

1. 6×8
2. 4×4
3. 3×6
4. 6×6
5. 4×3
6. 9×6
7. 8×8
8. 7×5
9. 4×7
10. 5×8
11. 4×6
12. 7×8
13. 5×9
14. 7×7
15. 9×7

Follow steps A and B, then complete the sentences.

- A. Draw 3 rows of dots.
- B. Show 1 dot in each row.

16.  dots are shown.

17. $3 \times 1 =$ 

20. Give a rule for multiplying when 1 is a factor.


- A. Draw 7 dots in each row.
- B. Show 1 row.

18.  dots are shown.

19. $1 \times 7 =$ 

- A. Draw 6 rows of dots.
- B. Show 0 dots in each row.


21.  dots are shown.

22. $6 \times 0 =$ 

25. Give a rule for multiplying when 0 is a factor.

- A. Draw 8 dots in each row.
- B. Show 0 rows.

23.  dots are shown.

24. $0 \times 8 =$ 

Practice

Copy and complete the multiplication tables.

1.

×	0	1	2	3	4	5	6	7	8	9
2										

Counting by 2's makes these easy.

2.

×	0	1	2	3	4	5	6	7	8	9
3										

Try counting by 3's.

3.

×	0	1	2	3	4	5	6	7	8	9
4										

4.

×	0	1	2	3	4	5	6	7	8	9
5										

5.

×	0	1	2	3	4	5	6	7	8	9
6										

6.

×	0	1	2	3	4	5	6	7	8	9
7										

7.

×	0	1	2	3	4	5	6	7	8	9
8										

8.

×	0	1	2	3	4	5	6	7	8	9
9										

9.

×	2
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

10.

×	3
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

11.

×	4
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

12.

×	5
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

13.

×	6
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

14.

×	7
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

15.

×	8
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

16.

×	9
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	



Write a multiplication fact to answer each question.

- | | |
|--|--|
| <p>17. 7 stacks. 6 boxes in each.
How many boxes in all?</p> <p>19. 2 stacks. 7 boxes in each.
How many boxes in all?</p> <p>21. 5 stacks. 6 boxes in each.
How many boxes in all?</p> <p>23. 4 stacks. 7 boxes in each.
How many boxes in all?</p> <p>25. 6 stacks. 7 boxes in each.
How many boxes in all?</p> | <p>18. 2 stacks. 6 boxes in each.
How many boxes in all?</p> <p>20. 3 stacks. 7 boxes in each.
How many boxes in all?</p> <p>22. 6 stacks. 5 boxes in each.
How many boxes in all?</p> <p>24. 5 stacks. 5 boxes in each.
How many boxes in all?</p> <p>*26. 6 stacks. 7 boxes in 5
stacks. 6 boxes in one
stack. How many boxes?</p> |
|--|--|

Silvio has to stack 30 boxes of cereal.

- Show three different ways he could do this.
- A customer buys 6 boxes. Show how Silvio could restack the boxes that are left.

**PROBLEM
SOLVING**

A Table of Basic Multiplication Facts

All the multiplication facts that you gave for page 98 can be found in this multiplication table.

×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30	36	42	48	54
7	0	7	14	21	28	35	42	49	56	63
8	0	8	16	24	32	40	48	56	64	72
9	0	9	18	27	36	45	54	63	72	81

For example, all the **multiples of 3** are in line with the factor 3.

×	0	1	2	3	4	5	6	7	8	9
0				0						
1				3						
2				6						
3	0	3	6	9	12	15	18	21	24	27
4				12						
5				15						
6				18						
7				21						
8				24						
9				27						

A multiple of a number is the product of that number and any other number.

Working Together

From the table above,

1. give the multiples of 8.
2. give the multiples of 5.

Without using the table above,

3. list the multiples of 7.
4. list the multiples of 9.

Use the table to complete these.

5. $7 \times 3 = 3 \times \dots$
6. $\dots \times 9 = 9 \times 6$
7. $1 \times 8 = 8 \times \dots$
8. $5 \times 0 = \dots \times 5$

Exercises

Without using the table above,

1. list the multiples of 3.
2. list the multiples of 4.

List each of these.

3. the multiples of 2
4. the multiples of 6
5. the multiples of 0
6. the multiples of 1

Give the rule for multiplying

7. when 0 is a factor.
8. when 1 is a factor.

For this multiplication table,

9. what is special about the two factors that give the products shown?


On grid paper, copy and color the table as shown.



x	1	2	3	4	5	6	7	8	9
1	1								
2		4							
3			9						
4				16					
5					25				
6						36			
7							49		
8								64	
9									81

10. Write the products for the red spaces.
11. Use the products shown in your red spaces to help you fill in the grey spaces.

Example: $6 \times 3 = 3 \times 6$, so the product in the red 6×3 space will also be in the grey 3×6 space.



Complete each of these. Use the red and grey parts of your table to help you if needed.

12. $7 \times 5 = 5 \times$ 

13. $8 \times 6 =$  \times 

14.  \times  $= 4 \times 8$

15.  \times  $= 7 \times 9$

*16.  $\times 5 = 5 \times$ 

*17. $9 \times$  $=$  $\times 9$

Copy the cross-number puzzle on grid paper and complete.

a			b		
		c			d
	e		f		
g			h		
		i		j	
	k		l		
m		n			
		o		p	
	q		r		

Across

- a. 9×3
b. 7×9
c. 9×6
e. 4×4
f. 2×9
g. 6×7
h. 9×5
i. 6×3
k. 8×3
l. 7×3
m. 5×6
n. 5×7
o. 2×8
p. 7×1
q. 5×8
r. 2×6

Down

- a. 6×4
b. 8×8
c. 8×7
d. 7×4
e. 3×4
f. 5×3
g. 7×7
h. 6×8
i. 7×2
j. 9×9
k. 5×4
l. 5×5
m. 4×9
n. 6×6
o. 2×5
p. 9×8


Finding the Missing Factor

The 7 submarine sandwiches get the same number of tomato slices. There are 28 tomato slices. How many tomato slices does each submarine sandwich get?



Think

28 tomato slices.

7 submarine sandwiches with  slices on each.

$$7 \times \begin{array}{|c|c|c|c|} \hline & & & \\ \hline & & & \\ \hline & & & \\ \hline & & & \\ \hline \end{array} = 28$$

Think of this multiplication table to help you find the missing factor.

×	0	1	2	3	4	5	6	7	8	9
7	0	7	14	21	28	35	42	49	56	63

Write $7 \times 4 = 28$

Each submarine sandwich gets 4 tomato slices.

Working Together

Use the tables to help you complete each multiplication fact.

×	5	6	7
4	20	24	28

1. $4 \times \square = 28$

3. $\square \times 6 = 48$

4. $\square \times 9 = 54$

5. $\square \times 6 = 42$

×	7	8	9
7	49	56	63

2. $7 \times \square = 56$

×	6
7	42
8	48
9	54

×	9
6	54
7	63
8	72

Complete.

6. $8 \times \square = 56$

8. $\square \times 5 = 0$

7. $\square \times 9 = 36$

9. $3 \times \square = 3$

Exercises

Complete.

1. $\square \times 4 = 24$

3. $8 \times 2 = \square$

5. $2 \times \square = 14$

7. $21 = 3 \times \square$

9. $\square \times 7 = 35$

11. $8 \times \square = 0$

13. $\square = 7 \times 7$

15. $5 \times \square = 40$

17. $0 = \square \times 2$

19. $\square = 6 \times 5$

21. $4 \times \square = 20$

23. $4 \times \square = 8$

25. $0 \times 4 = \square$

27. $54 = \square \times 6$

29. $2 \times \square = 18$

31. $\square = 3 \times 3$

33. $\square \times 8 = 16$

2. $6 \times \square = 54$

4. $\square \times 5 = 25$

6. $9 \times 1 = \square$

8. $32 = \square \times 4$

10. $9 = 9 \times \square$

12. $\square \times 6 = 18$

14. $\square \times 4 = 4$

16. $9 \times \square = 54$

18. $4 \times 7 = \square$

20. $42 = 7 \times \square$

22. $24 = 6 \times \square$

24. $\square \times 9 = 27$

26. $9 \times \square = 45$

28. $6 \times \square = 0$

30. $\square \times 1 = 7$

32. $3 \times \square = 24$

34. $16 = \square \times 4$

Complete this table.

1.

$1 \times 9 = 09$

$2 \times 9 = \square$

$3 \times 9 = \square$

$4 \times 9 = \square$

$5 \times 9 = \square$

$6 \times 9 = \square$

$7 \times 9 = \square$

$8 \times 9 = \square$

$9 \times 9 = \square$

2. Do you see any patterns in the products?

Complete this table.

3.

$1 \times 9 = 09$

$10 \times 9 = 90$

$2 \times 9 = \square$

$9 \times 9 = \square$

$3 \times 9 = \square$

$8 \times 9 = \square$

$4 \times 9 = \square$

$7 \times 9 = \square$

$5 \times 9 = \square$

$6 \times 9 = \square$

4. Do you see any patterns?

Can you complete any of these?

5. $9 \times \square = \square 7$

6. $6 \times \square = \square 4$

7. $\square \times 9 = \square 3$

try
this

Practice


Copy and complete the multiplication tables.

1.

×	5	
2		
	15	6

2.













×		
7	28	
	20	45

 $\times 5 = 15$

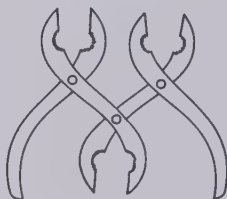
3.

×				
4		32		
	21		7	
			8	48
		48		36

Complete.

- | | |
|---|---|
| 4.  $\times 6 = 30$ | 5. $6 \times$  $= 42$ |
| 6.  $= 3 \times 6$ | 7.  $\times 3 = 18$ |
| 8. $8 \times$  $= 56$ | 9.  $= 7 \times 2$ |
| 10.  $\times 5 = 40$ | 11. $9 \times 7 =$  |
| 12. $27 = 9 \times$  | 13. $3 \times$  $= 12$ |
| 14.  $\times 9 = 72$ | 15.  $= 9 \times 9$ |

Linda invented this tool.
Use the table to help you find out what she called it.



16.

×	4	8	5
5	E	I	L
9	M	P	R
7	S	T	U

36 35 25 56 40 72 25 40 20 45 28



Solve.

17. 4 cans of apple juice in each sleeve. How many cans are in 6 sleeves?
18. 2 pouches of chicken coating mix in each box. How many pouches are in 7 boxes?
19. 5 packs of gum in each Family Pack. How many packs of gum are in 3 of the Family Packs?
20. 2 cuplets of yogurt in each sleeve. How many cuplets are in 9 sleeves?
21. 3 pouches for orange drink in each bag. How many pouches are in 8 bags?
22. 8 cinnamon rolls in each tube. How many cinnamon rolls are in 2 tubes?



The Multi-Table Game (two or more players)

Rules

1. Each player draws a square with 16 smaller squares.



2. The players write the numbers 2 to 9 in any order.

	6	3	9	7
4				
5				
2				
8				

3. First player calls out a product and writes it in the correct square.

	6	3	9	7
4				
5				
2			18	
8				

4. Other players check their squares to see if they can fill in this product.

	2	4	6	9
7				
3			18	
5				
8				

5. Players take turns calling products.

6. The player who first completes four products in line scores four points.

	6	3	9	7
4			36	
5			45	
2			18	
8			72	

7. Play continues for four rounds.

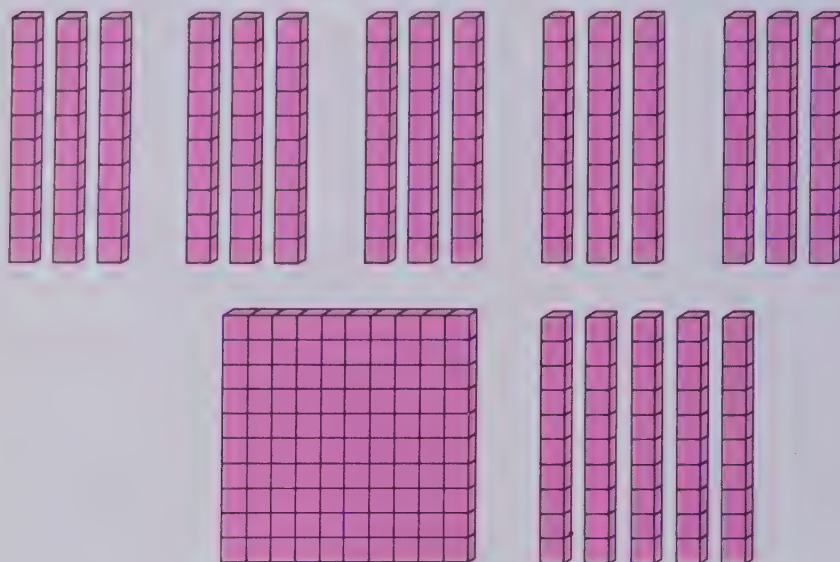


23. 6 tarts in each box. How many tarts are in 5 boxes?
24. 4 kaiser rolls in each bag. How many rolls are in 4 bags?
25. 4 servings of apple juice in each sleeve. How many servings are in 5 sleeves?
26. 3 servings in each pouch for orange drink. How many servings are in 9 pouches?
- *27. 7 sticks of gum in each pack. How many sticks are in all the packs of a Family Pack?
- *28. Are there more kaiser rolls in 8 bags than cinnamon rolls in 4 tubes?
- *29. Which has more, 6 boxes of tarts or 4 tubes of cinnamon rolls? How many more?

10 and Multiples of 10 as Factors

What is the product of 5 and 30?

For 5×30 , think of 5 groups of 30,
or 5 groups of 3 tens.



$$5 \times 3 = 15$$

$$5 \times 3 \text{ tens} = 15 \text{ tens}$$

$$5 \times 30 = 150$$

15 tens = 1 hundred 5 tens
or 150.

The product of 5 and 30 is 150.

Take another look:

$$\begin{array}{r} 3 \text{ tens} \\ 5 \\ \hline 15 \text{ tens} \end{array} \qquad \begin{array}{r} 30 \\ 5 \\ \hline 150 \end{array}$$

Working Together

Complete.

1. $2 \times 4 = \boxed{}$

$2 \times 4 \text{ tens} = \boxed{} \text{ tens}$

$2 \times 40 = \boxed{}$

2. $3 \times 1 = \boxed{}$

$3 \times 1 \text{ ten} = \boxed{} \text{ tens}$

$3 \times 10 = \boxed{}$

3. $4 \times 7 = \boxed{}$

$4 \times 7 \text{ tens} = \boxed{} \text{ tens}$

$4 \times 70 = \boxed{}$

4. $3 \times 20 = \boxed{}$

5. $8 \times 10 = \boxed{}$

6. $5 \times 60 = \boxed{}$

Multiply.

7. $\begin{array}{r} 30 \\ 2 \\ \hline \end{array}$

8. $\begin{array}{r} 40 \\ 4 \\ \hline \end{array}$

9. $\begin{array}{r} 10 \\ 5 \\ \hline \end{array}$

10. $\begin{array}{r} 80 \\ 5 \\ \hline \end{array}$

11. $\begin{array}{r} 50 \\ 2 \\ \hline \end{array}$

12. $\begin{array}{r} 60 \\ 7 \\ \hline \end{array}$

Exercises

Multiply.

- | | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|
| 1. 4×80 | 2. 1×50 | 3. 7×10 | 4. 6×40 | 5. 7×30 |
| 6. 7×70 | 7. 3×40 | 8. 9×30 | 9. 8×50 | 10. 3×80 |
| 11. 6×30 | 12. 7×50 | 13. 5×40 | 14. 5×70 | 15. 9×90 |
-
- | | | | | | | |
|--|--|--|--|--|--|--|
| 16. $\begin{array}{r} 40 \\ 2 \end{array}$ | 17. $\begin{array}{r} 90 \\ 5 \end{array}$ | 18. $\begin{array}{r} 60 \\ 3 \end{array}$ | 19. $\begin{array}{r} 10 \\ 9 \end{array}$ | 20. $\begin{array}{r} 80 \\ 7 \end{array}$ | 21. $\begin{array}{r} 60 \\ 6 \end{array}$ | 22. $\begin{array}{r} 90 \\ 4 \end{array}$ |
| 23. $\begin{array}{r} 30 \\ 3 \end{array}$ | 24. $\begin{array}{r} 20 \\ 8 \end{array}$ | 25. $\begin{array}{r} 50 \\ 5 \end{array}$ | 26. $\begin{array}{r} 70 \\ 9 \end{array}$ | 27. $\begin{array}{r} 90 \\ 6 \end{array}$ | 28. $\begin{array}{r} 70 \\ 6 \end{array}$ | 29. $\begin{array}{r} 20 \\ 5 \end{array}$ |
| 30. $\begin{array}{r} 90 \\ 2 \end{array}$ | 31. $\begin{array}{r} 50 \\ 4 \end{array}$ | 32. $\begin{array}{r} 40 \\ 7 \end{array}$ | 33. $\begin{array}{r} 10 \\ 6 \end{array}$ | 34. $\begin{array}{r} 70 \\ 8 \end{array}$ | 35. $\begin{array}{r} 60 \\ 8 \end{array}$ | 36. $\begin{array}{r} 50 \\ 3 \end{array}$ |

Copy and complete the tables.

- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|----------|----|----|----|----|----|----|---|--|--|--|--|--|--|---|----------|----|----|----|----|----|----|---|--|--|--|--|--|--|
| 37. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>\times</td><td>20</td><td>30</td><td>50</td><td>70</td><td>80</td><td>90</td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | \times | 20 | 30 | 50 | 70 | 80 | 90 | 4 | | | | | | | 38. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>\times</td><td>20</td><td>30</td><td>40</td><td>50</td><td>70</td><td>80</td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | \times | 20 | 30 | 40 | 50 | 70 | 80 | 5 | | | | | | |
| \times | 20 | 30 | 50 | 70 | 80 | 90 | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| \times | 20 | 30 | 40 | 50 | 70 | 80 | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>\times</td><td>20</td><td>40</td><td>50</td><td>60</td><td>80</td><td>90</td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | \times | 20 | 40 | 50 | 60 | 80 | 90 | 6 | | | | | | | 40. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>\times</td><td>20</td><td>30</td><td>40</td><td>60</td><td>70</td><td>90</td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | \times | 20 | 30 | 40 | 60 | 70 | 90 | 7 | | | | | | |
| \times | 20 | 40 | 50 | 60 | 80 | 90 | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| \times | 20 | 30 | 40 | 60 | 70 | 90 | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>\times</td><td>30</td><td>40</td><td>60</td><td>70</td><td>80</td><td>90</td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | \times | 30 | 40 | 60 | 70 | 80 | 90 | 8 | | | | | | | 42. <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>\times</td><td>20</td><td>40</td><td>50</td><td>60</td><td>70</td><td>80</td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | \times | 20 | 40 | 50 | 60 | 70 | 80 | 9 | | | | | | |
| \times | 30 | 40 | 60 | 70 | 80 | 90 | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| \times | 20 | 40 | 50 | 60 | 70 | 80 | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Add.

- | | | | | | |
|---|--|--|--|--|---|
| 1. $\begin{array}{r} 21 \\ 60 \end{array}$ | 2. $\begin{array}{r} 6 \\ 90 \end{array}$ | 3. $\begin{array}{r} 48 \\ 560 \end{array}$ | 4. $\begin{array}{r} 9 \\ 630 \end{array}$ | 5. $\begin{array}{r} 49 \\ 490 \end{array}$ | 6. $\begin{array}{r} 32 \\ 80 \end{array}$ |
| 7. $\begin{array}{r} 3 \\ 60 \\ 900 \end{array}$ | 8. $\begin{array}{r} 32 \\ 80 \\ 400 \end{array}$ | 9. $\begin{array}{r} 4 \\ 160 \\ 600 \end{array}$ | 10. $\begin{array}{r} 3 \\ 90 \\ 2400 \end{array}$ | 11. $\begin{array}{r} 56 \\ 280 \\ 700 \end{array}$ | 12. $\begin{array}{r} 9 \\ 810 \\ 3600 \end{array}$ |
| 13. $\begin{array}{r} 48 \\ 80 \\ 4000 \end{array}$ | 14. $\begin{array}{r} 42 \\ 480 \\ 3000 \end{array}$ | 15. $\begin{array}{r} 72 \\ 480 \\ 5600 \end{array}$ | 16. $\begin{array}{r} 42 \\ 560 \\ 6300 \end{array}$ | 17. $\begin{array}{r} 48 \\ 480 \\ 4800 \end{array}$ | |

**KEEPING
SHARP**

Multiplying Two-Digit Numbers

25 food bags in each box.
How many bags are in 9 boxes?

Multiply 9 and 25.

Multiply
 9×5 ones or
 9×5 .

tens	ones
2	5
	9
4	5

Multiply
 9×2 tens or
 9×20 .

	2	5
		9
	4	5
1	8	0

Add.

	2	5
		9
	4	5
1	8	0
2	2	5

There are 225 food bags
in 9 boxes.



Working Together

Multiply by following the steps.

1. 13
2

Multiply 2×3 . →
 Multiply 2×10 . →
 Add. → 26

2. 34
3

Multiply 3×4 . →
 Multiply 3×30 . →
 Add. →

Multiply.

3. 24	4. 38	5. 47
<u>2</u>	<u>3</u>	<u>6</u>



Exercises

Multiply.

- | | | |
|--|--|--|
| 1. $\begin{array}{r} 12 \\ 9 \end{array}$ | 2. $\begin{array}{r} 34 \\ 3 \end{array}$ | 3. $\begin{array}{r} 31 \\ 2 \end{array}$ |
| 4. $\begin{array}{r} 24 \\ 4 \end{array}$ | 5. $\begin{array}{r} 41 \\ 2 \end{array}$ | 6. $\begin{array}{r} 87 \\ 9 \end{array}$ |
| 7. $\begin{array}{r} 23 \\ 3 \end{array}$ | 8. $\begin{array}{r} 10 \\ 9 \end{array}$ | 9. $\begin{array}{r} 98 \\ 6 \end{array}$ |
| 10. $\begin{array}{r} 12 \\ 4 \end{array}$ | 11. $\begin{array}{r} 86 \\ 8 \end{array}$ | 12. $\begin{array}{r} 36 \\ 2 \end{array}$ |
| 13. $\begin{array}{r} 20 \\ 4 \end{array}$ | 14. $\begin{array}{r} 23 \\ 5 \end{array}$ | 15. $\begin{array}{r} 71 \\ 5 \end{array}$ |
| 16. $\begin{array}{r} 57 \\ 3 \end{array}$ | 17. $\begin{array}{r} 96 \\ 7 \end{array}$ | 18. $\begin{array}{r} 47 \\ 8 \end{array}$ |

Solve.

19. 48 ice-cream cups in each box. How many ice-cream cups are in 3 boxes?
20. 16 cheese slices in each package. How many slices are in 6 packages?
21. 32 fish sticks in each box. How many fish sticks are in 5 boxes?
22. 12 granola bars in each box. How many bars are in 7 boxes?
23. 24 wheat biscuits in each box. How many biscuits are in 9 boxes?
24. 15 tea bags in each box. How many are in 8 boxes?
25. 18 beef cubes in each box. How many are in 4 boxes?

100 and Multiples of 100 as Factors

There are 6 prizes of \$400 in the grocery store contest. How much prize money is there in all?



Multiply 6 and \$400.



$$6 \times 4 = 24$$

$$6 \times 4 \text{ hundreds} = 24 \text{ hundreds}$$

$$6 \times \$400 = \$2400$$


Here is another way to multiply 6 and \$400:


4 hundreds	\$400
6	6
24 hundreds	\$2400

There is \$2400 in prize money.

Working Together


Complete.

1. $4 \times 7 =$ 

4×7 hundreds =  hundreds


$4 \times 700 =$ 

2. $5 \times 1 =$ 

5×1 hundred =  hundreds

$5 \times 100 =$ 

3. $2 \times 400 =$ 

4. $4 \times 100 =$ 

5. $8 \times 600 =$ 

6. $6 \times 500 =$ 

Multiply.

7. $\begin{array}{r} 300 \\ \times 3 \\ \hline \end{array}$

8. $\begin{array}{r} 700 \\ \times 2 \\ \hline \end{array}$

9. $\begin{array}{r} 100 \\ \times 7 \\ \hline \end{array}$

10. $\begin{array}{r} 600 \\ \times 5 \\ \hline \end{array}$

11. $\begin{array}{r} 500 \\ \times 2 \\ \hline \end{array}$

12. $\begin{array}{r} 400 \\ \times 4 \\ \hline \end{array}$

Exercises

Multiply.

1. 4×200

2. 6×600

3. 5×200

4. 5×900

5. 5×700

6. 3×60

7. 9×200

8. 7×600

9. 4×600

10. 8×900

11. 4×80

12. 4×500

13. 3×700

14. 3×40

15. 2×300

16. 5×300

17. $\begin{array}{r} 800 \\ \times 5 \\ \hline \end{array}$

18. $\begin{array}{r} 700 \\ \times 7 \\ \hline \end{array}$

19. $\begin{array}{r} 500 \\ \times 9 \\ \hline \end{array}$

20. $\begin{array}{r} 20 \\ \times 7 \\ \hline \end{array}$

21. $\begin{array}{r} 400 \\ \times 5 \\ \hline \end{array}$

22. $\begin{array}{r} 800 \\ \times 6 \\ \hline \end{array}$

23. $\begin{array}{r} 900 \\ \times 4 \\ \hline \end{array}$

24. $\begin{array}{r} 80 \\ \times 3 \\ \hline \end{array}$

25. $\begin{array}{r} 900 \\ \times 3 \\ \hline \end{array}$

26. $\begin{array}{r} 500 \\ \times 3 \\ \hline \end{array}$

27. $\begin{array}{r} 900 \\ \times 7 \\ \hline \end{array}$

28. $\begin{array}{r} 600 \\ \times 2 \\ \hline \end{array}$

29. $\begin{array}{r} \$300 \\ \times 8 \\ \hline \end{array}$

30. $\begin{array}{r} \$500 \\ \times 5 \\ \hline \end{array}$

31. $\begin{array}{r} \$80 \\ \times 9 \\ \hline \end{array}$

32. $\begin{array}{r} \$300 \\ \times 4 \\ \hline \end{array}$

33. $\begin{array}{r} \$600 \\ \times 8 \\ \hline \end{array}$

34. $\begin{array}{r} \$400 \\ \times 7 \\ \hline \end{array}$

Copy and complete the tables.

35.	\times	100	200	300	500	700	900
	6						

36.	\times	100	300	400	500	700	800
	7						

37.	\times	100	200	400	500	700	800
	8						

38.	\times	100	300	400	600	700	900
	9						

39.	\times	4	5	6	7	8	9
	10						

40.	\times	9	8	7	6	5	4
	100						

Multiplying Three-Digit Numbers

432 rolls in each stack.

How many rolls are in 6 stacks?

Multiply 6 and 432.

Multiply
 6×2 ones
 or 6×2 .

hundreds	tens	ones
4	3	2
		6
	1	2

Multiply
 6×3 tens
 or 6×30 .

4	3	2
		6
	1	2
1	8	0

Multiply
 6×4 hundreds
 or 6×400 .

4	3	2
		6
	1	2
	1	8
2	4	0

Add.

4	3	2
		6
	1	2
	1	8
2	4	0
2	5	9

There are 2592 rolls in 6 stacks.



Working Together

Multiply by following the steps.

1.
$$\begin{array}{r} 312 \\ \times 4 \\ \hline \end{array}$$

Multiply 4×2 . \longrightarrow
 Multiply 4×10 . \longrightarrow
 Multiply 4×300 . \longrightarrow
 Add. \longrightarrow 1248

2.
$$\begin{array}{r} 476 \\ \times 8 \\ \hline \end{array}$$

8×6 \longrightarrow
 8×70 \longrightarrow
 8×400 \longrightarrow
 Add. \longrightarrow

Multiply.

3.
$$\begin{array}{r} 127 \\ \times 4 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 518 \\ \times 8 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 697 \\ \times 7 \\ \hline \end{array}$$

Exercises

Multiply.

1.
$$\begin{array}{r} 384 \\ \times 5 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 241 \\ \times 6 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 327 \\ \times 3 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 342 \\ \times 2 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 441 \\ \times 5 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 281 \\ \times 4 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 115 \\ \times 6 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 897 \\ \times 6 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 227 \\ \times 5 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 743 \\ \times 9 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 610 \\ \times 2 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 345 \\ \times 3 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 921 \\ \times 9 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 698 \\ \times 7 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 807 \\ \times 4 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 254 \\ \times 8 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 215 \\ \times 3 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 452 \\ \times 4 \\ \hline \end{array}$$

Here is a way to multiply with fewer steps.

Multiply 2 and 43.

Step 1

$$\begin{array}{r} 43 \\ \times 2 \\ \hline \end{array}$$

$2 \times 3 \longrightarrow$

Step 2

$$\begin{array}{r} 43 \\ \times 2 \\ \hline 86 \end{array}$$

$2 \times 4 \text{ tens} \longrightarrow$

Multiply as shown above.

1.
$$\begin{array}{r} 32 \\ \times 2 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 21 \\ \times 4 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 240 \\ \times 2 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 132 \\ \times 3 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 62 \\ \times 4 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 513 \\ \times 2 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 91 \\ \times 7 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 72 \\ \times 3 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 934 \\ \times 2 \\ \hline \end{array}$$

10. 32 slices of bread in one loaf. How many slices of bread in 3 loaves?

11. 144 rolls in each box. How many rolls in 2 boxes?

What happens if you try to multiply these as shown above?

12.
$$\begin{array}{r} 24 \\ \times 3 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 325 \\ \times 6 \\ \hline \end{array}$$

**try
this**

The Standard Form for Multiplication

Each sausage is cut into 24 samples.
How many samples can be made
from a package of 8 sausages?

Multiply 8 and 24.

Here is a long
form for multiplying.

$$\begin{array}{r} 24 \\ 8 \\ \hline 32 \end{array}$$

$8 \times 4 = 32$

Here is a short form or
standard form for multiplying.

$$\begin{array}{r} 3 \\ 24 \\ 8 \\ \hline 2 \end{array}$$

or 3 tens 2 ones.

$$\begin{array}{r} 24 \\ 8 \\ \hline 32 \\ 160 \end{array}$$

$8 \times 2 \text{ tens} = 16 \text{ tens}$

and 3 more tens
are 19 tens.

$$\begin{array}{r} 3 \\ 24 \\ 8 \\ \hline 192 \end{array}$$

Done!

$$\begin{array}{r} 24 \\ 8 \\ \hline 32 \\ 160 \\ \hline 192 \end{array}$$

Add.

192 samples can be made
from a package of sausages.

Here are some other multiplications
that are done in standard form.

$$\begin{array}{r} 2 \\ 314 \\ 7 \\ \hline 2198 \end{array}$$

$$\begin{array}{r} 4 \\ 450 \\ 8 \\ \hline 3600 \end{array}$$

$$\begin{array}{r} 52 \\ 284 \\ 6 \\ \hline 1704 \end{array}$$



Working Together

Show each multiplication in the standard form.

Example: 45 becomes
$$\begin{array}{r} 1 \\ 3 \\ \hline 15 \\ 120 \\ \hline 135 \end{array}$$

1. $\begin{array}{r} 16 \\ 7 \\ \hline 42 \\ 70 \\ \hline 112 \end{array}$	2. $\begin{array}{r} 291 \\ 4 \\ \hline 4 \\ 360 \\ 800 \\ \hline 1164 \end{array}$	3. $\begin{array}{r} 245 \\ 7 \\ \hline 35 \\ 280 \\ 1400 \\ \hline 1715 \end{array}$
--	---	---

Multiply. Use the standard form.

4. $\begin{array}{r} 15 \\ 8 \\ \hline \end{array}$	5. $\begin{array}{r} 291 \\ 5 \\ \hline \end{array}$	6. $\begin{array}{r} 382 \\ 7 \\ \hline \end{array}$
7. $\begin{array}{r} 73 \\ 6 \\ \hline \end{array}$	8. $\begin{array}{r} 270 \\ 8 \\ \hline \end{array}$	9. $\begin{array}{r} 709 \\ 7 \\ \hline \end{array}$

Exercises

Multiply. Use the standard form.

1. $\begin{array}{r} 36 \\ 3 \\ \hline \end{array}$	2. $\begin{array}{r} 261 \\ 6 \\ \hline \end{array}$	3. $\begin{array}{r} 82 \\ 3 \\ \hline \end{array}$
4. $\begin{array}{r} 758 \\ 2 \\ \hline \end{array}$	5. $\begin{array}{r} 406 \\ 5 \\ \hline \end{array}$	6. $\begin{array}{r} 43 \\ 6 \\ \hline \end{array}$
7. $\begin{array}{r} 640 \\ 4 \\ \hline \end{array}$	8. $\begin{array}{r} 29 \\ 9 \\ \hline \end{array}$	9. $\begin{array}{r} 573 \\ 7 \\ \hline \end{array}$
10. $\begin{array}{r} 281 \\ 9 \\ \hline \end{array}$	11. $\begin{array}{r} 403 \\ 6 \\ \hline \end{array}$	12. $\begin{array}{r} 135 \\ 9 \\ \hline \end{array}$
13. $\begin{array}{r} 266 \\ 7 \\ \hline \end{array}$	14. $\begin{array}{r} 36 \\ 4 \\ \hline \end{array}$	15. $\begin{array}{r} 349 \\ 4 \\ \hline \end{array}$

Solve.

16. 192 samples can be made from a package of sausages. How many samples can be made from 7 packages?
17. The boxes of toothpicks hold 450 each. How many toothpicks are in 3 boxes?
18. About 170 samples are eaten each hour. About how many samples are eaten in 8 h?
- *19. Each sausage is cut into 24 samples. How many cuts are needed for 8 sausages?

Practice

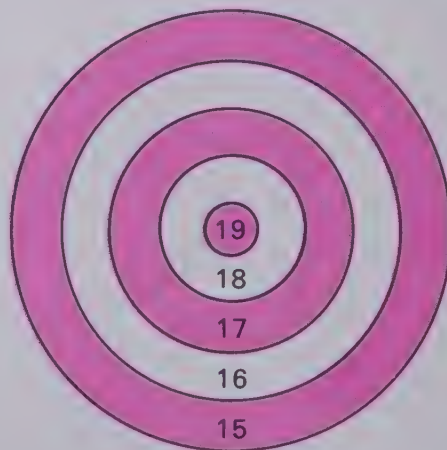
Multiply. Use the standard form.

- | | | | | | |
|--|--|--|--|--|--|
| 1. $\begin{array}{r} 434 \\ \times 2 \\ \hline \end{array}$ | 2. $\begin{array}{r} 69 \\ \times 4 \\ \hline \end{array}$ | 3. $\begin{array}{r} 167 \\ \times 5 \\ \hline \end{array}$ | 4. $\begin{array}{r} 134 \\ \times 7 \\ \hline \end{array}$ | 5. $\begin{array}{r} 48 \\ \times 3 \\ \hline \end{array}$ | 6. $\begin{array}{r} 188 \\ \times 5 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 76 \\ \times 7 \\ \hline \end{array}$ | 8. $\begin{array}{r} 209 \\ \times 9 \\ \hline \end{array}$ | 9. $\begin{array}{r} 41 \\ \times 8 \\ \hline \end{array}$ | 10. $\begin{array}{r} 736 \\ \times 3 \\ \hline \end{array}$ | 11. $\begin{array}{r} 117 \\ \times 8 \\ \hline \end{array}$ | 12. $\begin{array}{r} 73 \\ \times 9 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 170 \\ \times 3 \\ \hline \end{array}$ | 14. $\begin{array}{r} 98 \\ \times 4 \\ \hline \end{array}$ | 15. $\begin{array}{r} 132 \\ \times 9 \\ \hline \end{array}$ | 16. $\begin{array}{r} 303 \\ \times 7 \\ \hline \end{array}$ | 17. $\begin{array}{r} 65 \\ \times 3 \\ \hline \end{array}$ | 18. $\begin{array}{r} 662 \\ \times 6 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 281 \\ \times 4 \\ \hline \end{array}$ | 20. $\begin{array}{r} 919 \\ \times 2 \\ \hline \end{array}$ | 21. $\begin{array}{r} 81 \\ \times 9 \\ \hline \end{array}$ | 22. $\begin{array}{r} 147 \\ \times 4 \\ \hline \end{array}$ | 23. $\begin{array}{r} 852 \\ \times 2 \\ \hline \end{array}$ | 24. $\begin{array}{r} 167 \\ \times 5 \\ \hline \end{array}$ |
| 25. $\begin{array}{r} 801 \\ \times 9 \\ \hline \end{array}$ | 26. $\begin{array}{r} 99 \\ \times 2 \\ \hline \end{array}$ | 27. $\begin{array}{r} 24 \\ \times 7 \\ \hline \end{array}$ | 28. $\begin{array}{r} 255 \\ \times 5 \\ \hline \end{array}$ | 29. $\begin{array}{r} 209 \\ \times 9 \\ \hline \end{array}$ | 30. $\begin{array}{r} 744 \\ \times 3 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} 476 \\ \times 2 \\ \hline \end{array}$ | 32. $\begin{array}{r} 118 \\ \times 8 \\ \hline \end{array}$ | 33. $\begin{array}{r} 80 \\ \times 3 \\ \hline \end{array}$ | 34. $\begin{array}{r} 435 \\ \times 9 \\ \hline \end{array}$ | 35. $\begin{array}{r} 505 \\ \times 7 \\ \hline \end{array}$ | 36. $\begin{array}{r} 772 \\ \times 6 \\ \hline \end{array}$ |
| 37. $\begin{array}{r} 585 \\ \times 4 \\ \hline \end{array}$ | 38. $\begin{array}{r} 818 \\ \times 2 \\ \hline \end{array}$ | 39. $\begin{array}{r} 374 \\ \times 8 \\ \hline \end{array}$ | 40. $\begin{array}{r} 952 \\ \times 3 \\ \hline \end{array}$ | 41. $\begin{array}{r} 451 \\ \times 6 \\ \hline \end{array}$ | 42. $\begin{array}{r} 936 \\ \times 8 \\ \hline \end{array}$ |
| 43. $\begin{array}{r} 896 \\ \times 7 \\ \hline \end{array}$ | 44. $\begin{array}{r} 645 \\ \times 9 \\ \hline \end{array}$ | 45. $\begin{array}{r} 394 \\ \times 5 \\ \hline \end{array}$ | 46. $\begin{array}{r} 839 \\ \times 6 \\ \hline \end{array}$ | 47. $\begin{array}{r} 528 \\ \times 8 \\ \hline \end{array}$ | 48. $\begin{array}{r} 637 \\ \times 4 \\ \hline \end{array}$ |

Sophia scored 99 in this dart game.



- How many darts did she throw?
- Where did they hit the target?



**PROBLEM
SOLVING**

The picture shows how a take-out restaurant sold its chicken.



Solve.

49. How many Lunch Boxes were sold?
51. How many more Snack Packs than Buckets were sold?
53. Each Tub holds 15 pieces of chicken. How many pieces are in 8 Tubs?
- *55. There are 9 pieces of chicken in each Basket. How many pieces of chicken were sold in Baskets?
50. How many Family Boxes were sold?
52. How many Buckets and Tubs were sold?
54. Each Family Box holds 3 pieces. How many pieces are in 108 Family Boxes?
- *56. There are 2 pieces of chicken in each Lunch Box and Snack Pack. How many pieces were sold in Lunch Boxes and Snack Packs?

Multiplying Dollars and Cents

How much will 6 orders of Choice B cost?

Multiply 6 and \$1.75.

Think $\$1.75 = 175 \text{ cents}$

$$\begin{array}{r} \text{Multiply} \quad \begin{array}{r} 4 \quad 3 \\ 175 \\ \underline{6} \\ 1050 \end{array} \end{array}$$

Think $1050 \text{ cents} = \$10.50$

The 6 orders will cost \$10.50.

Take another look:

$$\begin{array}{r} \begin{array}{r} 4 \quad 3 \\ \$1.75 \\ \underline{6} \\ \$10.50 \end{array} \end{array}$$

Working Together

Multiply the whole numbers.
Use your results to help you multiply the amounts of money.

$$\begin{array}{r} 1. \quad \begin{array}{r} 129 \\ \underline{2} \end{array} \quad \begin{array}{r} \$1.29 \\ \underline{2} \end{array} \quad 2. \quad \begin{array}{r} 371 \\ \underline{4} \end{array} \quad \begin{array}{r} \$3.71 \\ \underline{4} \end{array} \end{array}$$

$$3. \quad \begin{array}{r} 55 \\ \underline{7} \end{array} \quad \begin{array}{r} 55\text{¢} \\ \underline{7} \end{array}$$

Multiply.

$$\begin{array}{r} 4. \quad \begin{array}{r} \$5.38 \\ \underline{7} \end{array} \quad 5. \quad \begin{array}{r} \$2.05 \\ \underline{6} \end{array} \quad 6. \quad \begin{array}{r} \$4.40 \\ \underline{5} \end{array} \quad 7. \quad \begin{array}{r} 75\text{¢} \\ \underline{4} \end{array} \quad 8. \quad \begin{array}{r} \$0.75 \\ \underline{4} \end{array} \end{array}$$



This product can be shown in dollars and cents.



Exercises

Multiply.

- | | | |
|--|---|---|
| 1. $\begin{array}{r} \$8.24 \\ \times 5 \\ \hline \end{array}$ | 2. $\begin{array}{r} \$3.27 \\ \times 2 \\ \hline \end{array}$ | 3. $\begin{array}{r} \$6.91 \\ \times 7 \\ \hline \end{array}$ |
| 4. $\begin{array}{r} \$5.75 \\ \times 8 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$2.67 \\ \times 2 \\ \hline \end{array}$ | 6. $\begin{array}{r} \$9.07 \\ \times 4 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 62\text{¢} \\ \times 8 \\ \hline \end{array}$ | 8. $\begin{array}{r} \$5.63 \\ \times 4 \\ \hline \end{array}$ | 9. $\begin{array}{r} \$2.90 \\ \times 9 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} \$3.08 \\ \times 5 \\ \hline \end{array}$ | 11. $\begin{array}{r} 45\text{¢} \\ \times 9 \\ \hline \end{array}$ | 12. $\begin{array}{r} \$5.77 \\ \times 3 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} \$0.49 \\ \times 6 \\ \hline \end{array}$ | 14. $\begin{array}{r} \$4.44 \\ \times 8 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$3.10 \\ \times 5 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} \$5.42 \\ \times 4 \\ \hline \end{array}$ | 17. $\begin{array}{r} \$8.09 \\ \times 6 \\ \hline \end{array}$ | 18. $\begin{array}{r} \$9.29 \\ \times 2 \\ \hline \end{array}$ |

Solve.

19. How much for 3 orders of Choice A?
20. How much for 7 orders of Choice D?
21. How much for 5 orders of Choice E?
22. Which costs more, 6 orders of Choice C or 9 orders of Choice B? How much more?
- *23. How much for 2 orders of Choice C, 1 order of Choice D, and 3 orders of chips?
- *24. When ordering fish and chips, which choices would give you 15 pieces of fish? How much would they cost?

More Than Two Factors

A case holds 5 large bags of milk.
Each large bag holds 3 pouches.
How many pouches of milk are in 8 cases?

Multiply 3, 5, and 8

like this:

$$\begin{array}{r} 3 \\ 5 \\ \hline 15 \end{array}$$

3 pouches in each large bag

5 large bags in each case

15 pouches in each case

$$\begin{array}{r} 4 \\ 15 \\ 8 \\ \hline 120 \end{array}$$

15 pouches in each case

8 cases

120 pouches in 8 cases

or like this:

$$\begin{array}{r} 8 \\ 5 \\ \hline 40 \end{array}$$

8 cases

5 large bags in each case

40 large bags in 8 cases

$$\begin{array}{r} 40 \\ 3 \\ \hline 120 \end{array}$$

40 large bags in 8 cases

3 pouches in each large bag

120 pouches in 8 cases

There are 120 pouches of milk in 8 cases.



Working Together

Multiply and complete.

1. $\begin{array}{r} 5 \\ 9 \end{array}$ \nearrow $\begin{array}{r} 2 \\ 2 \end{array}$

When the factors are 5, 9, and 2, the product is $\begin{array}{r} \cdot \\ \cdot \\ \cdot \end{array}$.

2. $\begin{array}{r} 2 \\ 9 \end{array}$ \nearrow $\begin{array}{r} 5 \\ 5 \end{array}$

When the factors are 2, 9, and 5, the product is $\begin{array}{r} \cdot \\ \cdot \\ \cdot \end{array}$.

3. $\begin{array}{r} 8 \\ 5 \end{array}$ \nearrow $\begin{array}{r} 2 \\ 2 \end{array}$ \nearrow $\begin{array}{r} 6 \\ 6 \end{array}$

When the factors are 8, 5, 2, and 6, the product is $\begin{array}{r} \cdot \\ \cdot \\ \cdot \\ \cdot \end{array}$.

Multiply in one order. Check your work by multiplying in another order.

4. $5 \times 8 \times 4$

5. $8 \times 9 \times 3 \times 2$

Exercises

Multiply the numbers in each bag. Use the matching letters to decode the message.

A $\begin{array}{r} 2 \quad 2 \\ 3 \end{array}$

C $\begin{array}{r} 3 \quad 3 \\ 2 \end{array}$

D $\begin{array}{r} 5 \quad 4 \\ 6 \quad 1 \end{array}$

E $\begin{array}{r} 7 \quad 4 \\ 5 \end{array}$

F $\begin{array}{r} 8 \quad 8 \\ 5 \end{array}$

G $\begin{array}{r} 7 \quad 8 \\ 9 \end{array}$

I $\begin{array}{r} 9 \quad 1 \\ 6 \quad 9 \end{array}$

K $\begin{array}{r} 8 \quad 8 \\ 8 \end{array}$

M $\begin{array}{r} 7 \quad 3 \\ 2 \quad 2 \end{array}$

N $\begin{array}{r} 5 \quad 8 \\ 5 \end{array}$

O $\begin{array}{r} 6 \quad 7 \\ 2 \quad 4 \end{array}$

R $\begin{array}{r} 9 \quad 4 \\ 2 \quad 5 \end{array}$

S $\begin{array}{r} 8 \quad 7 \\ 7 \end{array}$

84 12 512 140 12 18 336 120 140 120
84 140 392 392 12 504 140 320 336 360
12 320 360 486 140 200 120.

1. As I was going to Halifax, I met a man with 7 sacks.

Each sack had 7 cats.

Each cat had 7 kits.

Man, kits, cats, and sacks, how many were going to Halifax?



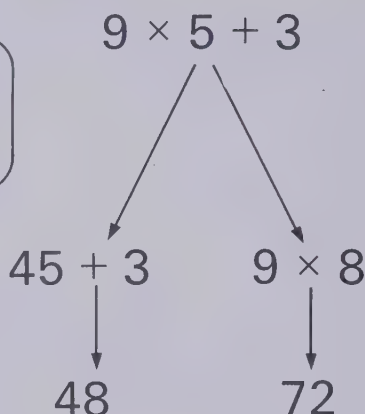
2. If each pouch of milk holds enough for 3 cats, is there enough milk in eight cases for all the cats in all the sacks?

PROBLEM SOLVING

Multiplication, Addition, and Subtraction Together

What is the result for $9 \times 5 + 3$?

If I multiply 9 and 5,
I get 45. Then I
add 45 and 3.



If I add 5 and 3,
I get 8. Then I
multiply 9 and 8.



$$(9 \times 5) + 3 = 48$$

$$9 \times (5 + 3) = 72$$

When there are two different **operations**, parentheses can be used to show which operation is to be done first.

Working Together

Work inside the parentheses first.

1. $(2 \times 3) + 4$

2. $5 \times (8 - 7)$

3. $(7 + 9) \times 8$

Are two different results possible?

If so, use parentheses to show how.

4. $8 \times 6 + 1$

5. $15 - 3 \times 4$

6. $26 + 18 \times 5$

Exercises

Are two different results possible?

If so, use parentheses to show how.

1. $29 \times 9 - 4$

2. $38 \times 3 + 5$

3. $12 + 43 \times 7$

Work inside the parentheses first.

4. $(43 + 77) \times 2$

5. $(400 - 227) \times 6$

6. $(85 \times 3) - 166$

7. $192 \times (9 - 2)$

8. $68 \times (1 + 5)$

9. $716 + (15 \times 0)$

10. $1000 - (387 \times 2)$

11. $58 \times (360 - 359)$

12. $(123 \times 9) + 893$

13. $(506 \times 4) - 1376$

14. $(75 + 592) \times 2$

15. $(1100 - 293) \times 4$

16. $80 \times (0 + 8)$

17. $(777 \times 7) + 1665$

18. $35 + (339 \times 5)$

Practice

Add, subtract, or multiply.

- | | | | |
|----------------------------|------------------------------|-----------------------------|--------------------|
| 1. 5×39 | 2. 3×968 | 3. $197 + 8$ | 4. $304 - 54$ |
| 5. $594 + 754$ | 6. 9×76 | 7. $2184 - 726$ | 8. $3726 + 2974$ |
| 9. 8×364 | 10. 7×46 | 11. $6026 - 2458$ | 12. 2×95 |
| 13. $988 + 3816$ | 14. $102 - 13$ | 15. 4×596 | 16. 6×256 |
| 17. $81 - 58$ | 18. 8×98 | 19. $947 + 985$ | 20. 7×158 |
| 21. $(6 \times 287) + 288$ | 22. $3020 - (382 + 1708)$ | 23. $(5 \times 495) - 500$ | |
| 24. $2200 - (4104 - 2208)$ | 25. $(234 - 225) \times 234$ | 26. $4000 - (4 \times 794)$ | |

Lee, Sol, Lois, and Les did these exercises on a calculator. What did the calculator show for each?

27.

$$\begin{array}{r} 11005 \\ - 555 \\ \hline \end{array}$$

28.

$$\begin{array}{r} 141 \\ \times 5 \\ \hline \end{array}$$

29.

$$\begin{array}{r} 3549 \\ + 1458 \\ \hline \end{array}$$

30.

$$\begin{array}{r} 179 \\ \times 3 \\ \hline \end{array}$$

Calculator digits can help you solve this riddle.

31. Riddle: What did Solomon Snake say when asked whether the calculator belonged to Lois or Les?

Hint:

$$\begin{array}{r} 919 \\ \times 5 \\ \hline \end{array}$$

Practice

COOKED HAM

\$2.85
kg

BARTLETT PEARS
(Direct from B.C.)

69¢
kg

MACARONI
(500 g box)

45¢

Strawberries
(Fresh Ontario)

98¢
box

Cake Mix / 500g box **.89** **ORANGE JUICE CONCENTRATE**
Soup / 3 cans **.99** 125 mL cans **2 / \$1.09**
Macaroni Dinner / 250g box **.43** **Orange Drink** / 500 mL bottle . . . **.65**

SMOKED HAM
(Product of Québec)
\$4.19 kg

GROUND CHUCK
\$2.89 kg

BOLOGNA
\$2.19 kg

MILK
Skim (4 L bag) . . . **\$1.65**
Whole (4 L bag) . . **\$1.79**

PANCAKE MIX
500 g box **.49**

NEW POTATOES
5 kg bag **\$1.79**

P.E.I. RED POTATOES
5 kg bag **\$1.65**

P.E.I. WHITE POTATOES
2 kg bag **.65**

MAPLE SYRUP
\$3.39 1 kg can

CHICKEN

\$1.95
kg

BOSC PEARS
(Produce of USA)
.95 kg

CORN SYRUP
\$3.49 4 kg can

Strawberry Jam
250 mL jar **.78**

Baby Food
Non – Meat
100 mL jar

23¢

CHEESE

CHEDDAR / 250 g package **\$1.20**

CANADIAN PROCESS / 500 g package . . **\$1.99**

GOUDA / 250 g package **\$1.45**

SWISS / 200 g package **\$1.29**

Baby Food
Meat
100 mL jar

39¢

Use information from the advertisement to help you find the cost for each of these.

1. a 3 kg smoked ham
2. 2 kg of B.C. pears
3. 4 kg of bologna
4. 4 kg of maple syrup
5. 3 boxes of pancake mix
6. 3 jars of strawberry jam
7. 5 boxes of macaroni dinner
8. 4 bags of skim milk
9. 2 packages of Canadian cheese
10. 4 boxes of strawberries
11. 5 bottles of orange drink
12. 3 boxes of cake mix
- *13. 9 cans of soup
- *14. 8 cans of orange juice
- *15. 2 bags of red potatoes and 5 bags of white potatoes
- *16. 9 jars of baby food

Multiply.

- | | | |
|---|---|---|
| 17. $\begin{array}{r} 146 \\ \times 7 \\ \hline \end{array}$ | 18. $\begin{array}{r} 872 \\ \times 4 \\ \hline \end{array}$ | 19. $\begin{array}{r} 508 \\ \times 8 \\ \hline \end{array}$ |
| 20. $\begin{array}{r} \$5.97 \\ \times 2 \\ \hline \end{array}$ | 21. $\begin{array}{r} \$2.68 \\ \times 3 \\ \hline \end{array}$ | 22. $\begin{array}{r} \$0.67 \\ \times 6 \\ \hline \end{array}$ |
| 23. $\begin{array}{r} 830 \\ \times 5 \\ \hline \end{array}$ | 24. $\begin{array}{r} 478 \\ \times 9 \\ \hline \end{array}$ | 25. $\begin{array}{r} 649 \\ \times 5 \\ \hline \end{array}$ |
| 26. $\begin{array}{r} \$2.09 \\ \times 8 \\ \hline \end{array}$ | 27. $\begin{array}{r} \$1.95 \\ \times 6 \\ \hline \end{array}$ | 28. $\begin{array}{r} \$3.80 \\ \times 7 \\ \hline \end{array}$ |
| 29. $\begin{array}{r} 694 \\ \times 4 \\ \hline \end{array}$ | 30. $\begin{array}{r} 473 \\ \times 3 \\ \hline \end{array}$ | 31. $\begin{array}{r} 318 \\ \times 6 \\ \hline \end{array}$ |

Mr. Burton made this shopping list from the advertisement.

GROCERY LIST

3 cans soup
2 bags whole milk
Bartlett pears - 1 kg
2 kg ground chuck
Macaroni dinner - 1

He bought everything that he had listed. Here is his cash register tape.

THANK YOU

Milk.....	1.79
Fruit...1 kg @	0.69
.....	0.69
Meat....2 kg @	2.98
.....	5.96
Grocery.....	0.99
Grocery.....	0.43
Milk.....	1.65
Total.....	11.51

COME AGAIN

1. What mistakes can you find on the tape?
2. What should the total be?

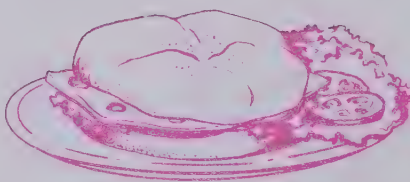
PROBLEM SOLVING

Solving Problems in Two or More Steps

Sharon's

SANDWICH SHOP

<i>Roast Beef Sandwich</i>	<i>.85</i>	<i>Pie</i>	<i>.45</i>
<i>Ham Sandwich</i>	<i>.75</i>	<i>Cake</i>	<i>.30</i>
<i>Ham with Cheese</i>	<i>.85</i>	<i>Ice Cream</i>	<i>.20</i>
<i>Peanut Butter</i>	<i>.30</i>		
<i>Peanut Butter and Jelly</i>	<i>.38</i>		
<i>Tuna Fish Sandwich</i>	<i>.60</i>	<i>Soft Drinks</i>	<i>.27 / .32 / .43</i>
		<i>Shakes</i>	<i>.45</i>
<i>Salad</i>	<i>.45</i>	<i>Coffee</i>	<i>.20 / .30</i>
<i>Chips</i>	<i>.30</i>	<i>Milk</i>	<i>.25</i>
		<i>Hot Chocolate</i>	<i>.20</i>



It's lunch time.

1. What would you order for two adults, a friend, and yourself?
2. How much would the order cost?
3. If each person has \$1.50, is there enough money for the order? How much would be left over or how much more would be needed?
4. If you could spend no more than \$5, what would you order for the four of you? How much would it cost? How much would you get back from \$5?
5. Is there any way that you could spend exactly \$5?

**PROBLEM
SOLVING**

Checking Up

Multiply.

- | | | | | | |
|---|---|---|--|--|--|
| 1. $\begin{array}{r} 2 \\ 3 \end{array}$ | 2. $\begin{array}{r} 9 \\ 1 \end{array}$ | 3. $\begin{array}{r} 0 \\ 8 \end{array}$ | 4. $\begin{array}{r} 5 \\ 4 \end{array}$ | 5. $\begin{array}{r} 9 \\ 5 \end{array}$ | 6. $\begin{array}{r} 7 \\ 6 \end{array}$ |
| 7. $\begin{array}{r} 30 \\ 2 \end{array}$ | 8. $\begin{array}{r} 10 \\ 8 \end{array}$ | 9. $\begin{array}{r} 200 \\ 4 \end{array}$ | 10. $\begin{array}{r} 50 \\ 3 \end{array}$ | 11. $\begin{array}{r} 600 \\ 7 \end{array}$ | 12. $\begin{array}{r} \$400 \\ 5 \end{array}$ |
| 13. $\begin{array}{r} 14 \\ 2 \end{array}$ | 14. $\begin{array}{r} 21 \\ 4 \end{array}$ | 15. $\begin{array}{r} 91 \\ 7 \end{array}$ | 16. $\begin{array}{r} 24 \\ 3 \end{array}$ | 17. $\begin{array}{r} 88 \\ 6 \end{array}$ | 18. $\begin{array}{r} 72 \\ 8 \end{array}$ |
| 19. $\begin{array}{r} 231 \\ 3 \end{array}$ | 20. $\begin{array}{r} 323 \\ 2 \end{array}$ | 21. $\begin{array}{r} 831 \\ 2 \end{array}$ | 22. $\begin{array}{r} 601 \\ 6 \end{array}$ | 23. $\begin{array}{r} 219 \\ 3 \end{array}$ | 24. $\begin{array}{r} \$130 \\ 5 \end{array}$ |
| 25. $\begin{array}{r} 187 \\ 9 \end{array}$ | 26. $\begin{array}{r} 818 \\ 4 \end{array}$ | 27. $\begin{array}{r} 850 \\ 8 \end{array}$ | 28. $\begin{array}{r} 136 \\ 6 \end{array}$ | 29. $\begin{array}{r} 507 \\ 2 \end{array}$ | 30. $\begin{array}{r} 361 \\ 9 \end{array}$ |
| 31. $\begin{array}{r} 336 \\ 4 \end{array}$ | 32. $\begin{array}{r} 745 \\ 7 \end{array}$ | 33. $\begin{array}{r} 594 \\ 9 \end{array}$ | 34. $\begin{array}{r} \$2.80 \\ 7 \end{array}$ | 35. $\begin{array}{r} \$7.06 \\ 5 \end{array}$ | 36. $\begin{array}{r} \$4.59 \\ 6 \end{array}$ |

Complete.

- | | | |
|---|---|---|
| 37. $2 \times \begin{array}{ c c c c } \hline & & & \\ \hline \end{array} = 16$ | 38. $\begin{array}{ c c c c } \hline & & & \\ \hline \end{array} \times 3 = 15$ | 39. $3 \times \begin{array}{ c c c c } \hline & & & \\ \hline \end{array} = 24$ |
| 40. $\begin{array}{ c c c c } \hline & & & \\ \hline \end{array} \times 8 = 0$ | 41. $9 \times \begin{array}{ c c c c } \hline & & & \\ \hline \end{array} = 9$ | 42. $\begin{array}{ c c c c c c } \hline & & & & & \\ \hline \end{array} \times 7 = 56$ |

Find the result.

- | | | |
|---------------------------|------------------------------------|------------------------------------|
| 43. $4 \times 1 \times 4$ | 44. $5 \times 7 \times 2 \times 3$ | 45. $3 \times 2 \times 3 \times 2$ |
| 46. $2 \times 9 \times 2$ | 47. $6 \times 6 \times 4$ | 48. $9 \times 9 \times 9 \times 0$ |
| 49. $3 \times (5 + 4)$ | 50. $(41 - 37) \times 16$ | 51. $155 + (7 \times 135)$ |
| 52. $(5 \times 65) - 65$ | 53. $120 - (8 \times 12)$ | 54. $(6 \times 30) + 36$ |

Solve.

- | | |
|--|--|
| 55. 45 cookies in a package.
How many in 6 packages? | 56. 144 cans in a carton.
How many cans in 7 cartons? |
| 57. 59¢ for a hamburger.
How much for 3 hamburgers? | 58. 36 pieces of chicken in a tub.
How many pieces in 7 tubs? |
| 59. Each bag of potatoes costs \$1.65.
How much for 5 bags? | 60. One kilogram of ham costs \$4.19.
How much for 3 kg? |

6 DIVISION

Sharing

Wendy has 20 buttons to share among 5 friends.

She gives one to each...



...and another...



..and another...



...until all the buttons are given away.



When 20 are shared
among 5, each gets 4.

This is shown by
the division fact

$$20 \div 5 = 4$$

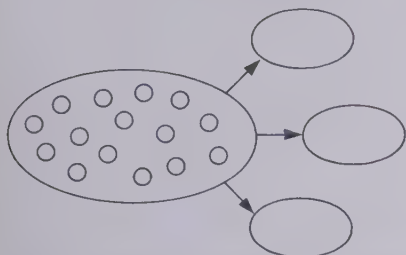
or

$$\begin{array}{r} 4 \\ 5 \overline{) 20} \end{array}$$

20 divided by 5
equals 4.

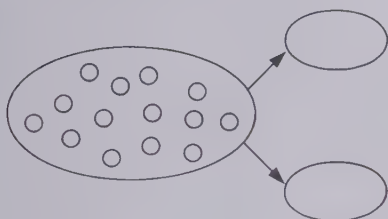
Working Together

1. 15 buttons to share in 3 equal groups. Copy the picture.



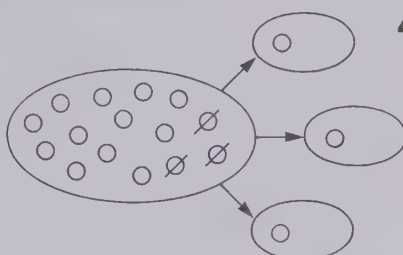
Complete the picture and the division fact.

5.



$$2 \overline{)14}$$

2. Show the sharing like this. Complete the picture.



Draw a picture and give the division fact for each.

3. How many are in each group?

4. Complete.

$$15 \div 3 = \square$$

$$3 \overline{)15}$$

6. 12 buttons shared equally among 4

7. 18 divided by 3

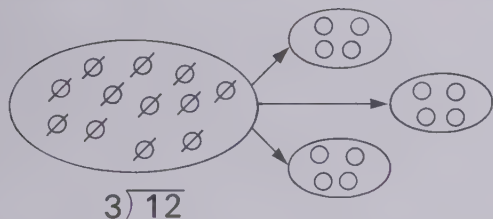
8. $21 \div 7$

9. $5 \overline{)10}$

Exercises

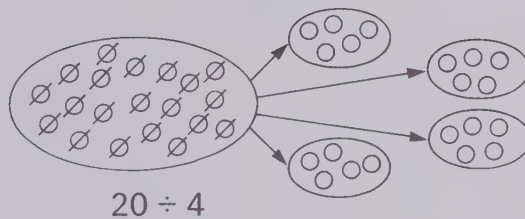
Complete the division fact for each picture.

1.



$$3 \overline{)12}$$

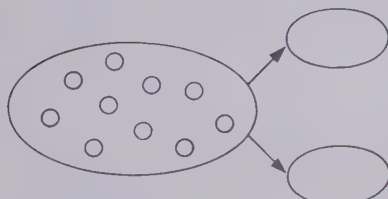
2.



$$20 \div 4$$

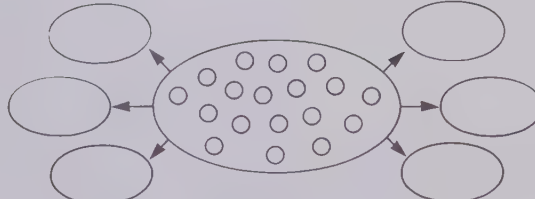
Complete each picture and the division fact.

3.



$$10 \div 2$$

4.



$$6 \overline{)18}$$

Draw a picture and write the division fact for each.

5. $9 \div 3$

6. $12 \div 2$

7. $5 \overline{)15}$

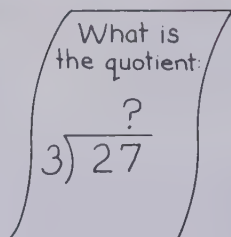
8. $4 \overline{)16}$

9. $6 \overline{)24}$

10. $8 \overline{)24}$

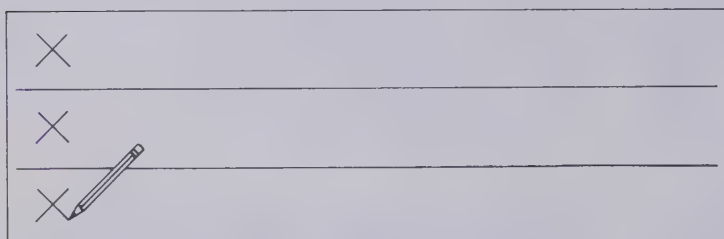
Finding the Quotient

The result
in a division
is the **quotient**.



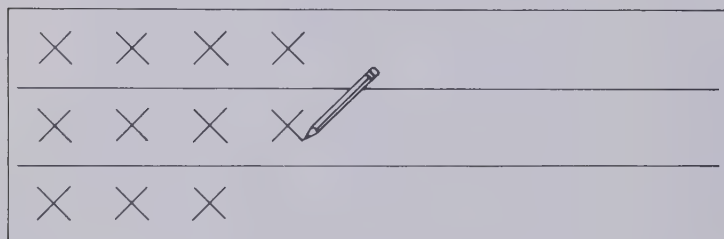
Drawing an array
can help you
find a quotient.

For $3\overline{)27}$, draw 27 X's in 3 rows so that
there are the same number in each row.

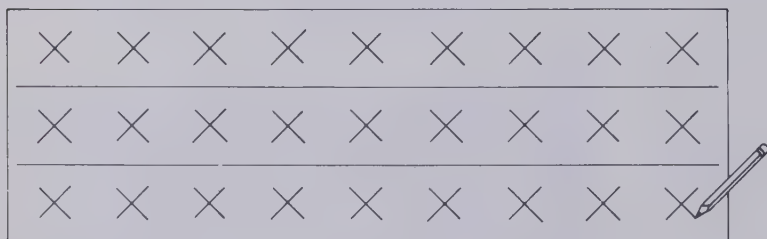


Count the X's
as you share them
among the 3 rows.
Stop when you reach 27.

1, 2, 3, ...



..., 10, 11, ...



..., 25, 26, 27, stop.

There will be 9 in each row.
9 is the quotient.

$$\begin{array}{r} 9 \\ 3\overline{)27} \end{array}$$

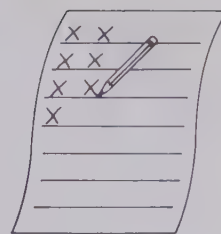
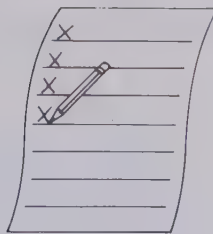
Remembering the multiplication fact $3 \times 9 = 27$
lets you check that the quotient is correct.

27 in all.
3 rows.
9 in each row.

Working Together

Use a sheet of ruled paper. →

1. Draw 24 X's on 4 lines so that the same number are on each line.
2. Count the number of X's on each line.
3. Complete this division fact: $4 \overline{)24}$



1, 2, 3, 4, 5, 6, 7, ...

Draw X's on ruled paper to help you find each quotient.

4. $2 \overline{)16}$

5. $3 \overline{)24}$

6. $5 \overline{)20}$

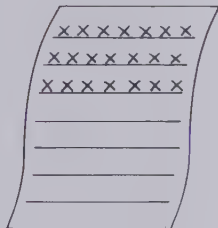
Exercises

Name the picture that matches each division.

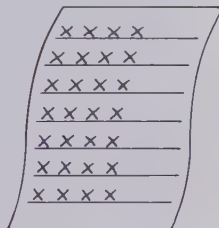
Use it to help you complete the division fact.

1. $4 \overline{)32}$

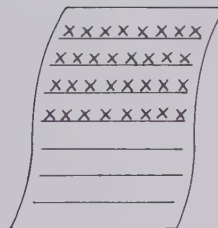
A



B



C



2. $3 \overline{)21}$

3. $7 \overline{)28}$

Find each quotient. Use ruled paper and draw a picture if you need to.

4. $2 \overline{)8}$

5. $4 \overline{)12}$

6. $3 \overline{)15}$

7. $5 \overline{)30}$

8. $4 \overline{)28}$

9. $7 \overline{)21}$

10. $6 \overline{)42}$

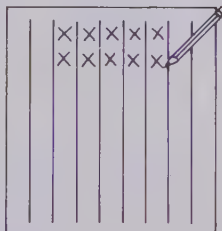
11. $5 \overline{)35}$

12. $9 \overline{)27}$

13. $8 \overline{)56}$

14. Write a multiplication fact that matches each division fact in Exercises 1–13.

Sherri put 40 X's in 5 *columns* with the same number in each column.



..., 6, 7, 8, 9, 10, ...

Complete these facts.

15. $5 \overline{)40}$

16. $5 \times \begin{array}{c} \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{array} = 40$

Related Multiplication and Division Facts

Gerry had 28 stamps. She made this array.

28 stamps
in 7 rows

$$\begin{array}{r} 4 \\ 7 \overline{) 28} \end{array}$$

4 in each row

$$7 \times 4 = 28$$



28 stamps
in 4 columns

$$4 \overline{) 28}^7$$

7 in each
column

$$4 \times 7 = 28$$

The numbers 28, 4, and 7
give a family of four
multiplication and division facts.

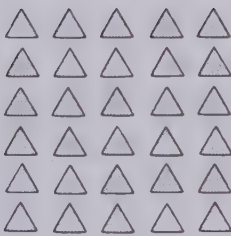
$\begin{array}{r} 4 \\ 7 \overline{) 28} \end{array}$	$\begin{array}{r} 7 \\ 4 \overline{) 28} \end{array}$
$7 \times 4 = 28$	$4 \times 7 = 28$

Working Together

Give two multiplication facts and two division facts to match each array.

1. 

2 rows,
7 columns,
14 in all.

2. 

Use the one complete fact to help you complete the other facts in each family.

3. $4 \times 7 = 28$
 $7 \times \text{[array of 7 squares]} = 28$
 $28 \div 7 = \text{[array of 4 squares]}$
 $28 \div 4 = \text{[array of 7 squares]}$

4. $9 \overline{)54}$ $9 \times 6 = 54$
 $6 \overline{)54}$ $6 \times \text{[array of 9 squares]} = 54$

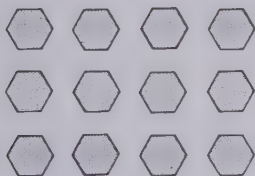
5. $6 \times 2 = 12$
 $\text{[array of 6 squares]} \overline{) \text{[array of 12 squares]}}$
 $\text{[array of 2 squares]} \overline{) \text{[array of 12 squares]}}$
 $\text{[array of 6 squares]} \times \text{[array of 2 squares]} = \text{[array of 12 squares]}$

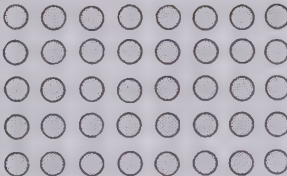
Write the family of division facts and multiplication facts for each group of numbers.

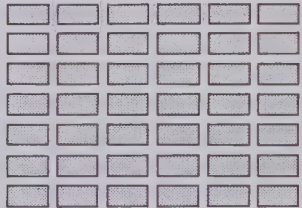
6. 18, 3, and 6 7. 1, 8, and 8 8. 5, 5, and 25

Exercises

Write two multiplication facts and two division facts to match each array.

1. 

2. 

3. 

Write the complete family of facts for each group of numbers.

4. $5 \times 3 = 15$
 $3 \times \text{[array of 5 squares]} = 15$
 $15 \div 3 = \text{[array of 5 squares]}$
 $15 \div 5 = \text{[array of 3 squares]}$

5. $8 \overline{)48}$ $8 \times \text{[array of 6 squares]} = 48$
 $6 \overline{)48}$ $6 \times \text{[array of 8 squares]} = 48$
 $8 \times \text{[array of 6 squares]} = 48$

6. $9 \overline{)27}$ 9×3
 3×9 $3 \overline{)27}$

7. 8, 4, 32 8. 5, 10, 2 9. 6, 2, 3
 10. 7, 7, 49 11. 9, 4, 36 12. 21, 3, 7
 13. 5, 1, 5 14. 9, 72, 8 15. 64, 8, 8

Practice

An array can help us find a product for any two factors.

For 6×7 , an array with 6 rows and 7 columns will have 42 in all.

$$6 \times 7 = 42$$

Count the red blocks to check that 42 is correct.

×	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

The 81 products in this multiplication table form an array.

In an array like the one shown in red, the number in the lower right corner shows how many are in the array.

$$6 \times 7 = 42$$

×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

This multiplication table can help you with the basic division facts.

For $42 \div 6$, look across the row for the factor 6 and find the column with 42 in it. Look to the top of this column and find the other factor, 7.

$$\begin{array}{r} 7 \\ 6 \overline{) 42} \end{array}$$

×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

Exercises

Divide. Use the multiplication table if you need to.

1. $4 \overline{)20}$ 2. $3 \overline{)15}$ 3. $7 \overline{)28}$
4. $9 \overline{)81}$ 5. $8 \overline{)40}$ 6. $5 \overline{)25}$
7. $2 \overline{)16}$ 8. $6 \overline{)18}$ 9. $4 \overline{)12}$
10. $45 \div 9$ 11. $14 \div 7$ 12. $56 \div 8$
13. $7 \overline{)49}$ 14. $9 \overline{)72}$ 15. $3 \overline{)21}$
16. $5 \overline{)30}$ 17. $4 \overline{)16}$ 18. $2 \overline{)12}$
19. $1 \overline{)6}$ 20. $8 \overline{)24}$ 21. $8 \overline{)32}$
22. $32 \div 4$ 23. $48 \div 6$ 24. $64 \div 8$
25. $3 \overline{)27}$ 26. $4 \overline{)4}$ 27. $9 \overline{)54}$
28. $7 \overline{)35}$ 29. $5 \overline{)45}$ 30. $4 \overline{)24}$
31. $9 \overline{)18}$ 32. $7 \overline{)63}$ 33. $7 \overline{)56}$
34. $48 \div 8$ 35. $35 \div 5$ 36. $9 \div 3$

Divide to find another factor.

Example: 6 is one factor of 42.

$$\begin{array}{r} 7 \\ 6 \overline{)42} \end{array} \quad 6 \times 7 = 42$$

7 is another factor of 42.

	Product	One factor
37.	10	2
38.	24	6
39.	18	3
40.	63	9
41.	20	5
42.	72	8
43.	24	3

Joanne has collected
8 different hockey cards.



Study the information
in this chart.

Position	Players needed	Joanne has cards for
Forward	2	2
Defense	2	2
Center	1	3
Goalie	1	1

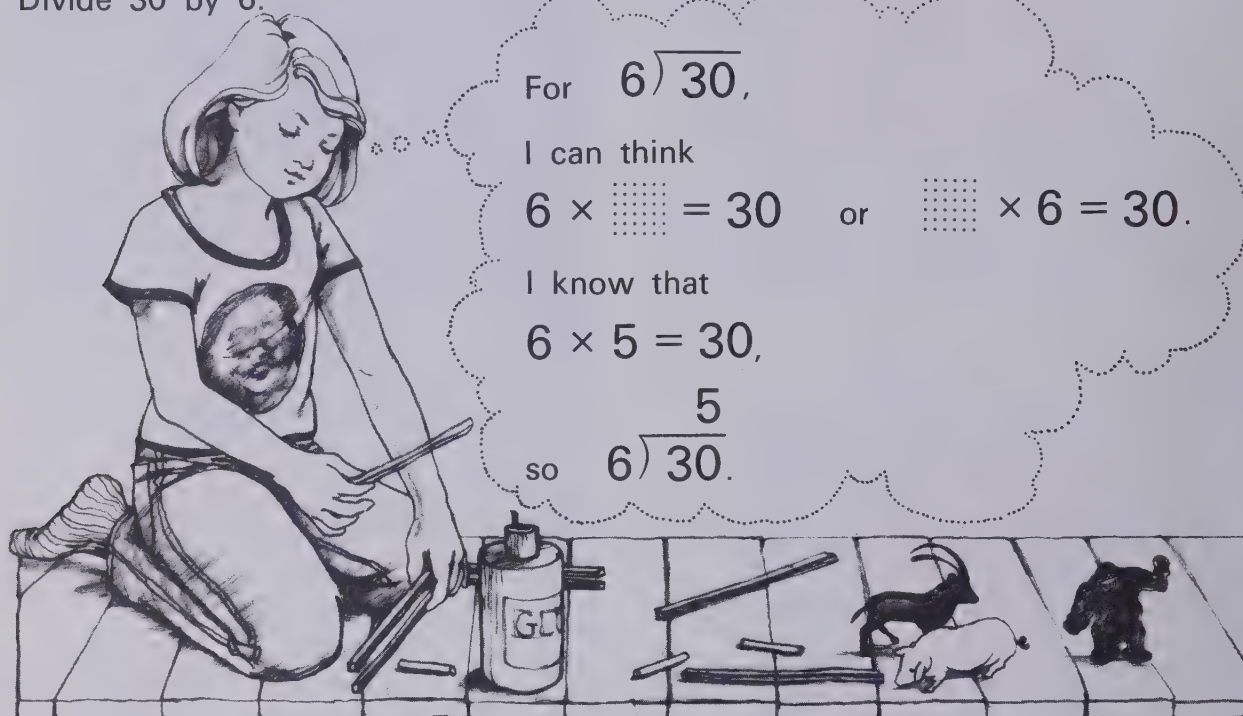
1. How many different lineups can Joanne put on the ice with her 8 cards?
2. Joanne trades 1 center for a new forward. Now how many different lineups can Joanne put on the ice?

**PROBLEM
SOLVING**

Using Multiplication to Divide

Today, Jean will have 6 pens for her 30 animals.
How many will she put in each pen so that
each pen has the same number of animals?

Divide 30 by 6.



Jean will put 5 animals in each pen.

Working Together

Complete.

1. $4 \times \begin{smallmatrix} \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \end{smallmatrix} = 32$ 2. $8 \times \begin{smallmatrix} \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \end{smallmatrix} = 56$

$$\begin{array}{r} \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ 4 \overline{)32} \end{array}$$

$$\begin{array}{r} \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ 8 \overline{)56} \end{array}$$

Give a multiplication fact that
can be used for each division.
Then complete the division fact.

3. $5 \overline{)15}$

4. $9 \overline{)54}$

Divide.

5. $3 \overline{)21}$

6. $8 \overline{)48}$

Exercises

Divide. Show the
multiplication fact you use.

1. $3 \overline{)12}$

2. $2 \overline{)14}$

3. $5 \overline{)45}$

4. $4 \overline{)16}$

5. $6 \overline{)36}$

6. $9 \overline{)18}$

7. $5 \overline{)35}$

8. $8 \overline{)72}$

9. $3 \overline{)24}$

10. $7 \overline{)56}$

11. $9 \overline{)72}$

12. $6 \overline{)18}$

13. $9 \overline{)45}$

14. $7 \overline{)63}$

15. $6 \overline{)24}$

16. $7 \overline{)42}$

17. $4 \overline{)36}$

18. $8 \overline{)64}$



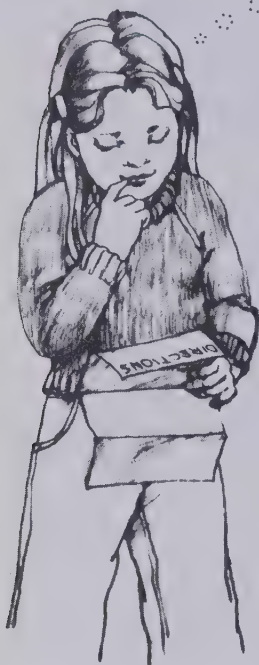
Solve. Show each division.

19. Last month, Jean had 4 pens and 24 animals. How many did she keep in each pen so that each pen had the same number?
20. Last week, Jean had 5 pens and 25 animals. How many did she keep in each pen so that each pen had the same number?
21. Jean also has a collection of 28 dolls from 4 countries. She has the same number of dolls from each country. How many has she from each country?
22. Jean has 21 items of clothing for her 7 dolls from Mexico. If she puts the same number of items on each doll, how many items are on each doll?
23. For her birthday Jean got a book that had 27 outfits for 3 paper dolls. There were the same number of outfits for each doll. How many outfits were there for each doll?
- *24. Jean had 30 animals and 6 pens. She was given 2 more animals. She built 2 more pens. Now how many animals can she keep in each pen so that each pen has the same number of animals?

Finding the Number of Groups

The directions suggest that Gail use 8 beads on each necklet that she makes. Gail has 56 beads. How many necklets can she make?

Divide 56 by 8.



For $8 \overline{)56}$,

I can think

$$\begin{array}{|c|c|c|c|c|c|} \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \end{array} \times 8 = 56$$

or

$$8 \times \begin{array}{|c|c|c|c|c|c|} \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \hline \end{array} = 56.$$

I know that

$$8 \times 7 = 56,$$

$$\begin{array}{r} 7 \\ 8 \overline{)56} \end{array}$$

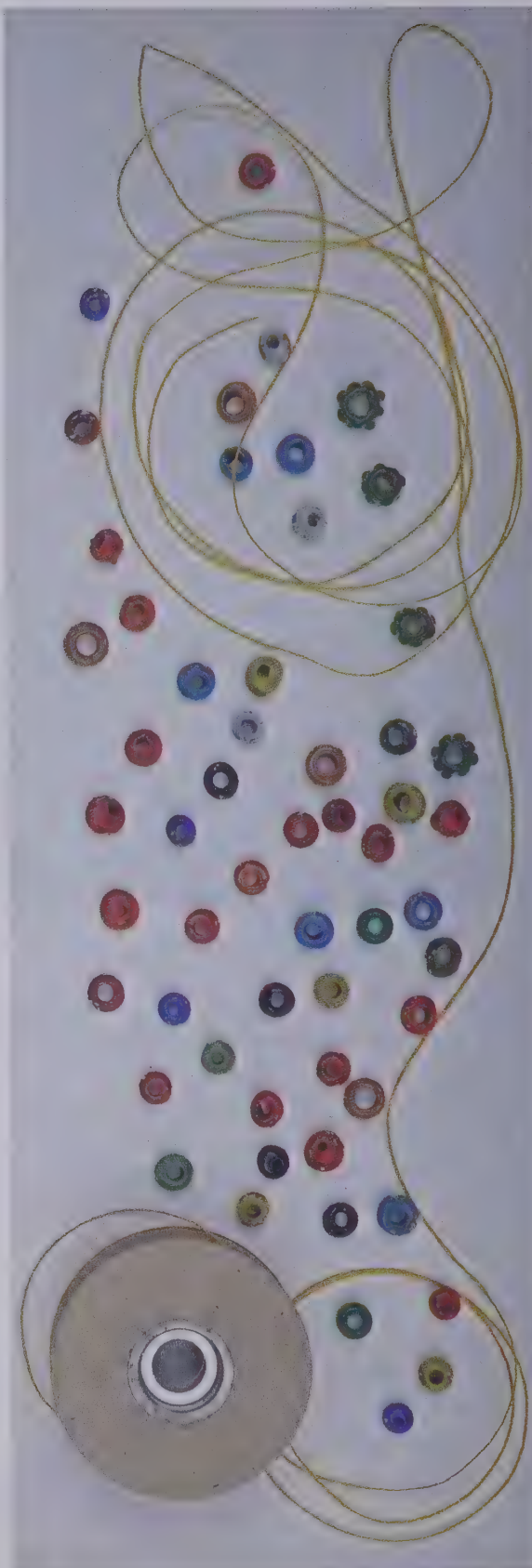
so

Gail can make 7 necklets.

Working Together

Give the division fact that you would use to help solve each of these.

1. 48 beads are to be sorted into groups of 6. How many groups will there be?
2. Donny uses 7 beads on each bracelet. How many bracelets can he make with 28 beads?
3. Melissa needs 35 beads. She can buy them in packs of 5. How many packs must she buy?





Exercises

Solve. Show each division.

1. Louis needs 36 beads. He can buy them in packs of 6. How many packs must he buy?
2. Louis will make necklets that use 9 beads each. How many can he make with 36 beads?
3. A belt needs 24 beads tied in groups of 3. How many groups of beads will be in the belt?
4. 4 beads are used in a ring pattern. How many rings could be made using this pattern if there are 24 beads?

Divide. Show the multiplication fact you use.

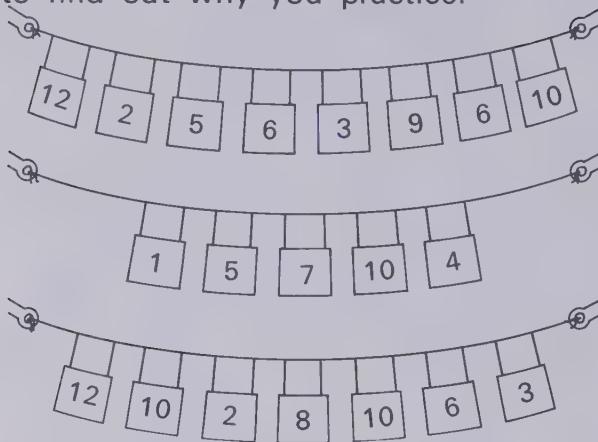
- | | | |
|------------------------|------------------------|------------------------|
| 5. $6 \overline{)12}$ | 6. $5 \overline{)20}$ | 7. $4 \overline{)28}$ |
| 8. $3 \overline{)18}$ | 9. $2 \overline{)18}$ | 10. $8 \overline{)64}$ |
| 11. $7 \overline{)21}$ | 12. $9 \overline{)54}$ | 13. $5 \overline{)25}$ |
| 14. $9 \overline{)81}$ | 15. $4 \overline{)20}$ | 16. $7 \overline{)35}$ |
| 17. $4 \overline{)36}$ | 18. $8 \overline{)24}$ | 19. $9 \overline{)45}$ |

Solve.

- *20. Tammy has 21 beads. She needs 3 for each earring. How many pairs of earrings can she make?
- *21. Lyn can use 5 or 6 beads on each bracelet. She has 41 beads. How many bracelets can she make so that she uses all the beads? How many beads will be on each bracelet?

Practice

Decode the message
to find out why you practice.

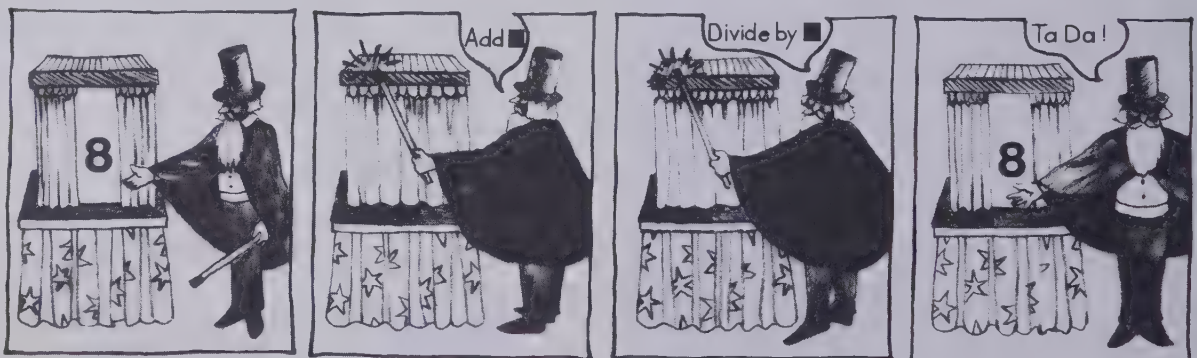


A $8 \overline{)40}$	C $4 \overline{)24}$	D 7×2
E 2×5	F $7 \overline{)56}$	I $5 \overline{)45}$
K $6 \overline{)42}$	M $3 \overline{)3}$	P 4×3
R $4 \overline{)8}$	S $9 \overline{)36}$	T $8 \overline{)24}$

The students showed their
collections at the hobby show.

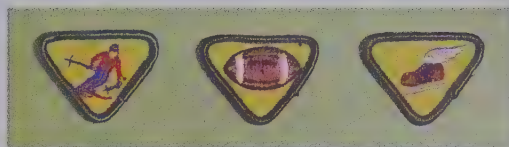
1. Phillip displayed 21 badges on 7 cards. The cards each had the same number of badges. Write the division fact that shows how many badges were on each card.
2. Helen set up 56 pieces of doll furniture in groups of 8. How many groups of furniture did Helen display?
3. Harvey made cardboard hands to show his finger puppets. He put 5 puppets on each hand. How many hands did he need for 30 finger puppets?
4. Leah showed 48 rings in 6 boxes. The boxes each had the same number of rings. How many rings were in each box?
5. The school set up 9 tables for 54 displays. All the tables had the same number of displays. How many displays were on each table?

What numbers complete this comic strip?



**PROBLEM
SOLVING**

CUB BADGES



6. Gerry had 72 stamps. She put them into packets with 8 in each packet. How many packets of stamps did she have?
7. Jean displayed 32 toy animals on 4 shelves. She put the same number on each shelf. How many did she put on each shelf?
8. Geoffrey's display had room for 5 trays that showed some of his rock collection. He wanted to show 45 rocks with the same number on each tray. How many rocks did he put on each tray?
9. Laurie had 81 bottle caps set up in an array with 9 rows. How many caps were in each row?

Which gives the greater quotient,

10. $3\overline{)12}$ or $4\overline{)12}$?

11. $6\overline{)24}$ or $6\overline{)42}$?

12. $9\overline{)27}$ or $8\overline{)24}$?

Which gives the greatest quotient,

13. $5\overline{)25}$, $5\overline{)30}$, or $5\overline{)40}$?

14. $4\overline{)36}$, $6\overline{)36}$, or $9\overline{)36}$?

15. $2\overline{)12}$, $4\overline{)28}$, or $8\overline{)48}$?

16. $1\overline{)4}$, $3\overline{)12}$, $6\overline{)24}$, or $9\overline{)36}$?

17. $3\overline{)24}$, $7\overline{)42}$, $8\overline{)72}$, or $9\overline{)27}$?

18. $8\overline{)40}$, $6\overline{)42}$, $5\overline{)45}$, or $7\overline{)49}$?

19. $3\overline{)27}$, $4\overline{)32}$, $5\overline{)35}$, or $6\overline{)36}$?

Extending the Division Facts

Angus has 120 marbles. He keeps them in 3 bags with the same number in each bag. How many marbles does he keep in each bag?

Divide 120 by 3.

For $3 \overline{)120}$, share 120, or 12 tens.

Think

$$3 \times 4 = 12$$

$$3 \times 4 \text{ tens} = 12 \text{ tens}$$

$$3 \times 40 = 120$$

Write $3 \overline{)120}$ 40

Angus keeps 40 marbles in each bag.



Working Together

Complete.

1. For $2 \overline{)60}$, $2 \times \begin{array}{c} \text{tens} \\ \text{tens} \end{array} = 6$
 $2 \times \begin{array}{c} \text{tens} \\ \text{tens} \end{array} = 6 \text{ tens}$
 $2 \times \begin{array}{c} \text{tens} \\ \text{tens} \end{array} = 60$

$$\begin{array}{r} 2 \overline{)60} \end{array}$$

2. For $8 \overline{)560}$, $8 \times \begin{array}{c} \text{tens} \\ \text{tens} \\ \text{tens} \end{array} = 56$
 $8 \times \begin{array}{c} \text{tens} \\ \text{tens} \\ \text{tens} \end{array} = 56 \text{ tens}$
 $8 \times \begin{array}{c} \text{tens} \\ \text{tens} \\ \text{tens} \end{array} = 560$

$$\begin{array}{r} 8 \overline{)560} \end{array}$$

Give a multiplication fact that can be used to find the quotient.

Example: For $5 \overline{)450}$, use
 $5 \times 9 = 45,$
 $5 \times 9 \text{ tens} = 45 \text{ tens, or}$
 $5 \times 90 = 450.$

3. $4 \overline{)80}$ 4. $7 \overline{)210}$ 5. $6 \overline{)300}$

Divide. Give the multiplication fact you use.

6. $3 \overline{)90}$ 7. $9 \overline{)360}$ 8. $5 \overline{)300}$

Exercises

Divide.

- | | | |
|-------------------------|-------------------------|-------------------------|
| 1. $3 \overline{)60}$ | 2. $4 \overline{)240}$ | 3. $2 \overline{)40}$ |
| 4. $5 \overline{)150}$ | 5. $3 \overline{)30}$ | 6. $4 \overline{)160}$ |
| 7. $7 \overline{)280}$ | 8. $6 \overline{)360}$ | 9. $3 \overline{)240}$ |
| 10. $4 \overline{)200}$ | 11. $9 \overline{)180}$ | 12. $5 \overline{)100}$ |
| 13. $8 \overline{)320}$ | 14. $5 \overline{)350}$ | 15. $8 \overline{)480}$ |
| 16. $7 \overline{)70}$ | 17. $6 \overline{)540}$ | 18. $7 \overline{)490}$ |
| 19. $8 \overline{)240}$ | 20. $9 \overline{)450}$ | 21. $5 \overline{)400}$ |
| 22. $2 \overline{)100}$ | 23. $7 \overline{)560}$ | 24. $4 \overline{)360}$ |
| 25. $9 \overline{)720}$ | 26. $6 \overline{)420}$ | 27. $7 \overline{)630}$ |

Solve.

28. Angus used to have 4 bags for 120 marbles. If he kept the same number of marbles in each bag, how many were in each bag?
29. Joy had 20 marbles. She gave 2 to each friend. How many friends got marbles?

Subtract.

1. $\begin{array}{r} 463 \\ 285 \end{array}$	2. $\begin{array}{r} 3280 \\ 748 \end{array}$	3. $\begin{array}{r} 4161 \\ 3965 \end{array}$	4. $\begin{array}{r} 3024 \\ 1446 \end{array}$	5. $\begin{array}{r} 802 \\ 233 \end{array}$	6. $\begin{array}{r} 7000 \\ 4215 \end{array}$
--	---	--	--	--	--

Use $>$, $<$, or $=$ to make true statements.

- | | |
|--|------------------------------------|
| 7. $1359 - 682 \bigcirc 1234 - 567$ | 8. $788 + 788 \bigcirc 2364 - 788$ |
| 9. $5555 - 777 \bigcirc 2222 + 2468$ | 10. $4000 - 739 \bigcirc 3271$ |
| 11. $1563 + 437 \bigcirc 9070 - 7070$ | 12. $2452 - 888 \bigcirc 1546$ |
| 13. $789 - 456 \bigcirc 987 - 654$ | 14. $999 + 999 \bigcirc 1999$ |
| 15. $6957 + 2798 \bigcirc 2798 + 6975$ | |

**KEEPING
SHARP**

Remainders

Geoffrey has 27 rocks and 4 trays.
He wants to place the same number
of rocks on each tray. How many
should he place on each tray?
How many rocks will be left over?

Divide 27 by 4.

For $4 \overline{)27}$,

think

$$4 \times 6 = 24$$

$$4 \times 7 = 28 \dots \text{too many!}$$

Write $4 \overline{)27}$

$$\begin{array}{r} 6 \\ 4 \overline{)27} \\ \underline{24} \\ 3 \end{array}$$

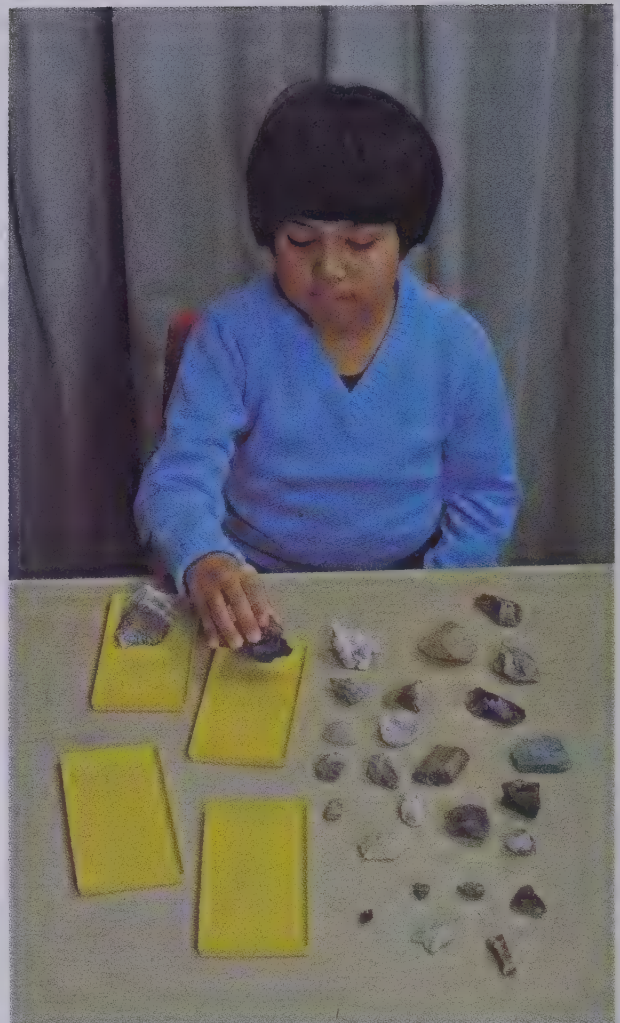
6 rocks for each tray
24 rocks used
3 rocks left over

Geoffrey should place
6 rocks on each tray.
There will be 3 left over.

In division, the number
left over is the **remainder**.

For $4 \overline{)27}$, here is another way
to show that the quotient is 6
and the remainder is 3.

$$\begin{array}{r} 6 \text{ R}3 \\ 4 \overline{)27} \\ \underline{24} \\ 3 \end{array}$$



Working Together

Give the multiplication fact
that you would use
to find the quotient.

Example: For $7 \overline{)44}$,

$$7 \times 6 = 42$$

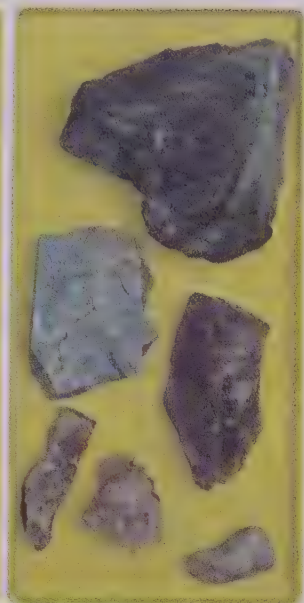
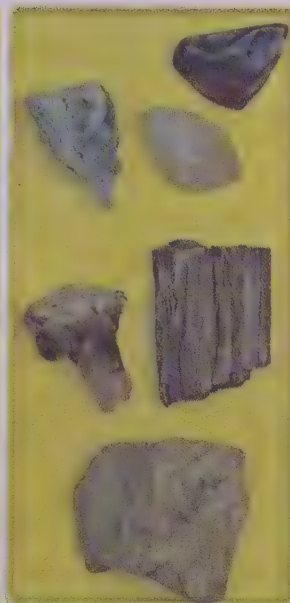
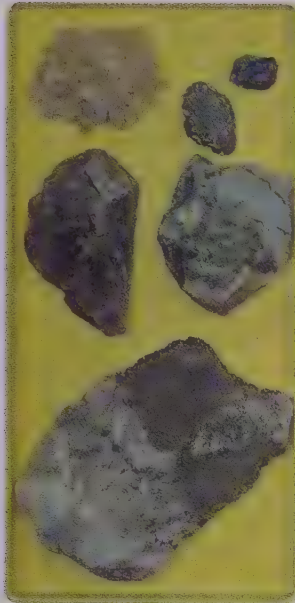
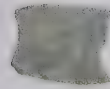
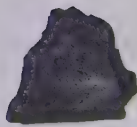
$$7 \times 7 = 49 \dots \text{too great!}$$

$$\text{Use } 7 \times 6 = 42.$$

1. $3 \overline{)8}$ 2. $6 \overline{)27}$ 3. $8 \overline{)52}$

Divide. Show the
quotient and the remainder.

4. $2 \overline{)9}$ 5. $5 \overline{)37}$ 6. $9 \overline{)33}$



Exercises

Divide. Show the quotient and the remainder.

1. $4 \overline{)9}$
2. $7 \overline{)24}$
3. $3 \overline{)10}$
4. $4 \overline{)38}$
5. $6 \overline{)47}$
6. $8 \overline{)23}$
7. $5 \overline{)24}$
8. $3 \overline{)20}$
9. $7 \overline{)57}$
10. $9 \overline{)43}$
11. $6 \overline{)42}$
12. $2 \overline{)19}$
13. $6 \overline{)34}$
14. $8 \overline{)61}$
15. $9 \overline{)53}$
16. $7 \overline{)55}$
17. $5 \overline{)23}$
18. $8 \overline{)24}$
19. $9 \overline{)20}$
20. $8 \overline{)66}$
21. $6 \overline{)20}$
22. $9 \overline{)54}$
23. $7 \overline{)34}$
24. $9 \overline{)10}$

A number greater than 1 is a **prime number** if it has only two factors, itself and 1.

Example: 5 is a prime number. Its only factors are 5 and 1.

$$5 \times 1 = 5 \quad 1 \times 5 = 5$$

Show why these are not prime numbers.

- | | | |
|-------|-------|-------|
| 1. 6 | 2. 15 | 3. 16 |
| 4. 20 | 5. 42 | 6. 22 |

Which of these are prime numbers?

- | | |
|-------|--------|
| 7. 11 | 8. 7 |
| 9. 9 | 10. 17 |
| 11. 2 | 12. 35 |

**try
this**

Writing Equations

A number sentence that has an equals sign (=) is an **equation**.

Examples of equations: $2 + 5 = 7$

$$15 - \boxed{\cdot\cdot\cdot\cdot} = 6$$

$$7 \times 3 = 21$$

$$48 \div 6 = \boxed{\cdot\cdot\cdot\cdot}$$

An equation may be written to match a word problem.

Example: 3 boys share 18 books equally. How many books does each boy get?

If you can find the number that replaces $\boxed{\cdot\cdot\cdot\cdot}$ to make a true statement from either equation, you have solved the problem.

$18 \div 3 = \boxed{\cdot\cdot\cdot\cdot}$ and
 $3 \times \boxed{\cdot\cdot\cdot\cdot} = 18$
are equations that match the problem.

Use $\boxed{\cdot\cdot\cdot\cdot}$ and write a multiplication equation and a division equation for each of these.

- 24 snapshots are needed. Each of the 6 children is asked to bring the same number. How many should each bring?
- Each page of the photo album holds 8 snapshots. How many pages are needed for 24 snapshots?
- 56 children are to form 8 teams that are equal in size. How many will be on each team?
- Each car will carry 5 people. There are 45 people. How many cars are needed?

Use $\boxed{\cdot\cdot\cdot\cdot}$ and write an addition equation and a subtraction equation for each of these.

- Jack had 75¢. He got 19¢ back when he bought a loaf of bread. How much did the loaf of bread cost?
- 48 beads are red. There are 100 beads in all. How many are not red?

**PROBLEM
SOLVING**

Can you find the number that replaces $\boxed{\cdot\cdot\cdot\cdot}$ to make each of the equations you wrote a true statement?

Checking Up

Write the complete family of facts for each group of numbers.

1. 3×7 7×3
 $3 \overline{)21}$ $7 \overline{)21}$

2. $4 \overline{)36}$ 4×9
 $9 \overline{)36}$ 9×4

3. $6 \overline{)30}$ $5 \overline{)30}$
 6×5 5×6

4. 8, 3, and 24

5. 2, 18, and 9

6. 49, 7, and 7

Divide. Show the multiplication fact you use.

7. $4 \overline{)12}$

8. $3 \overline{)27}$

9. $8 \overline{)32}$

10. $2 \overline{)14}$

11. $9 \overline{)27}$

12. $8 \overline{)40}$

13. $6 \overline{)36}$

14. $5 \overline{)45}$

15. $7 \overline{)42}$

16. $6 \overline{)54}$

Write the quotient.

17. $4 \overline{)24}$

18. $6 \overline{)12}$

19. $2 \overline{)10}$

20. $5 \overline{)30}$

21. $3 \overline{)9}$

22. $8 \overline{)64}$

23. $4 \overline{)20}$

24. $9 \overline{)63}$

25. $7 \overline{)56}$

26. $9 \overline{)36}$

27. $3 \overline{)180}$

28. $9 \overline{)720}$

29. $5 \overline{)400}$

30. $8 \overline{)560}$

31. $7 \overline{)280}$

Solve. Show each division.

32. The product is 15.
 One factor is 3.
 What is the other factor?

33. One factor is 5.
 The product is 35.
 What is the other factor?

34. Marcel shared 42 seeds
 equally among 6 packets.
 How many seeds did he
 put into each packet?

35. Phyllis collects stamps
 in blocks of 4. She has
 32 stamps. How many
 blocks does she have?

Divide. Show the quotient and the remainder.

36. $3 \overline{)26}$

37. $6 \overline{)28}$

38. $2 \overline{)13}$

39. $5 \overline{)26}$

40. $7 \overline{)27}$

41. $9 \overline{)50}$

42. $4 \overline{)31}$

43. $8 \overline{)55}$

44. $7 \overline{)32}$

45. $4 \overline{)10}$

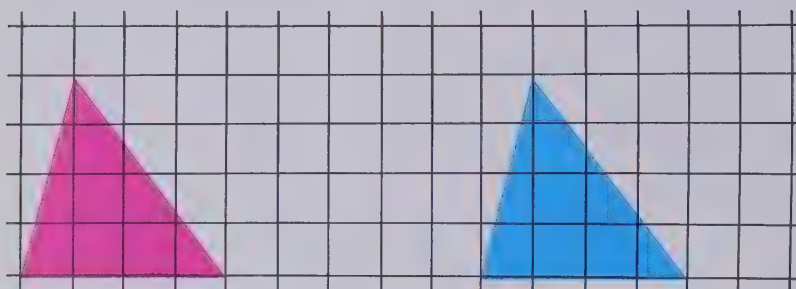
Solve.

46. Myrna had 37 badges. She gave 5 to each friend. How many friends got 5 badges? How many extra badges were there?
47. The 50 seashells were shared equally by 6 girls. How many shells did each girl get? How many extra shells were there?

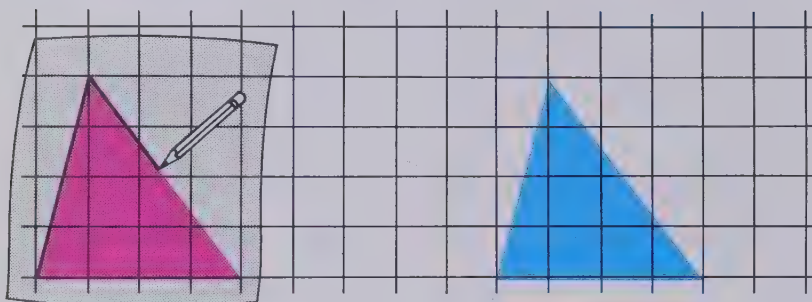
7 GEOMETRY AND GRAPHING

Motions for Matching Congruent Shapes

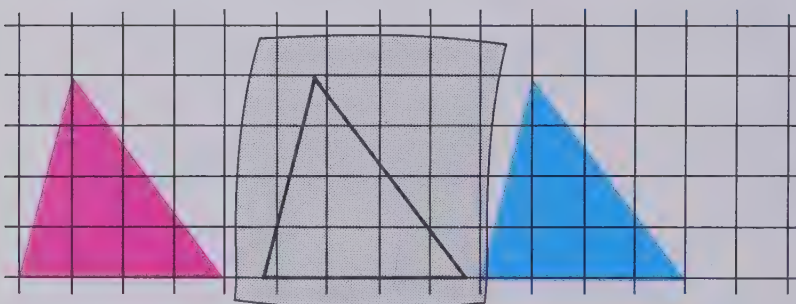
If a tracing of one shape matches a second shape, the shapes are congruent.



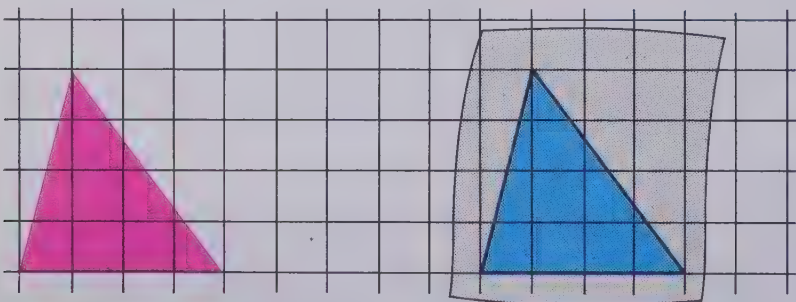
Trace the red shape.



Slide the tracing.



The tracing matches the blue shape.



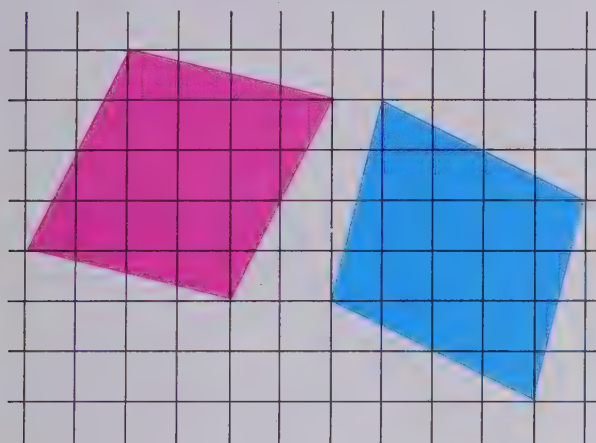
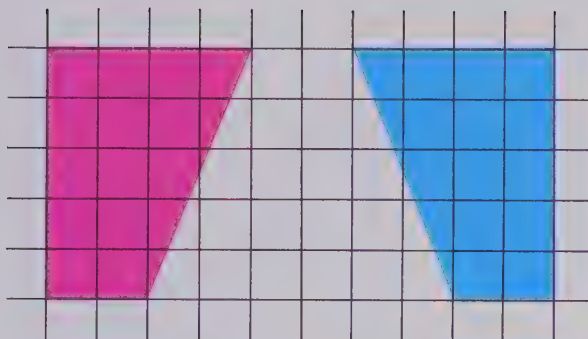
The red shape and the blue shape are congruent.



Working Together

Use tracing paper.

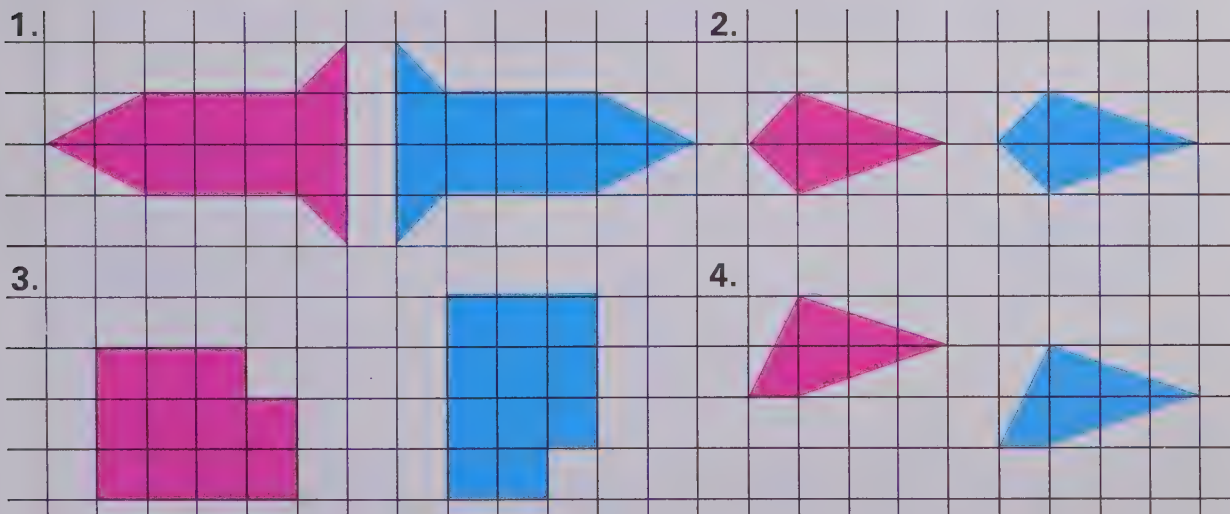
1. Trace the red shape. →
2. Can you slide the tracing to match the blue shape?
3. Flip your tracing over.
Can you match the tracing and the blue shape?
4. Are the red shape and the blue shape congruent?



- ← 5. Trace the red shape.
6. Can you slide the tracing to match the blue shape?
7. Can you flip the tracing to match the blue shape?
8. Turn your tracing. Can you match the tracing and the blue shape?
9. Are the red shape and the blue shape congruent?

Exercises

Trace the red shape. Try to slide, flip, or turn the tracing to match it and the blue shape. If they match, tell which motion you used.



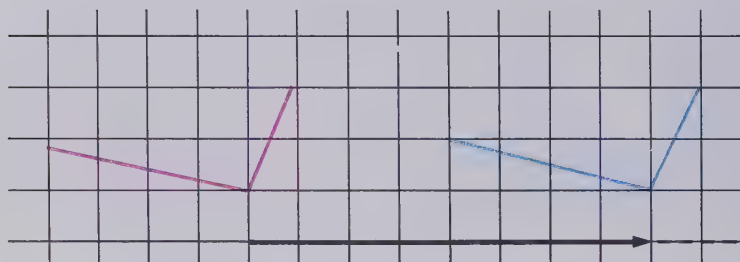
Slides

The **slide arrow** shows the direction and the distance that the toboggan slides in one second.

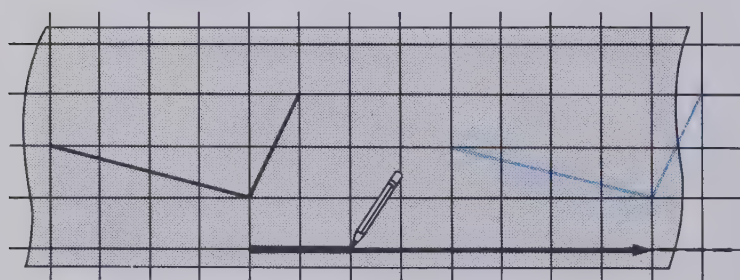
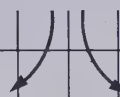


Working Together

Use graph paper. Copy the two shapes and the arrow.



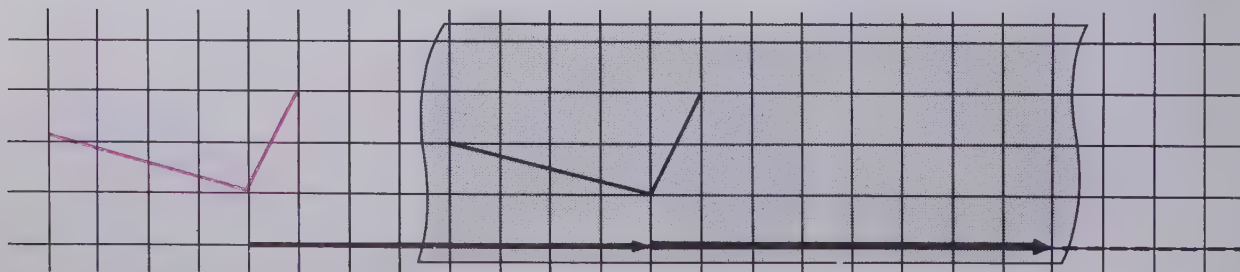
1. In front of the arrow, draw more of the line that contains the arrow.



2. Place tracing paper on your picture. Trace the red shape and the slide arrow.

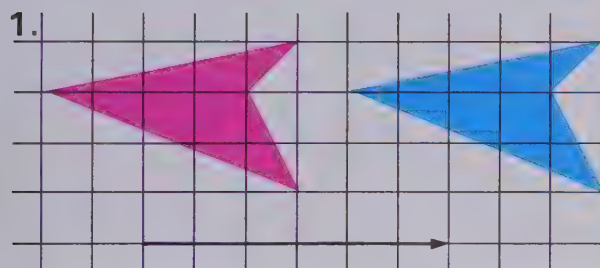
3. Slide the traced arrow along the line of the slide arrow. Stop when the end of the traced arrow is on the tip of the slide arrow.

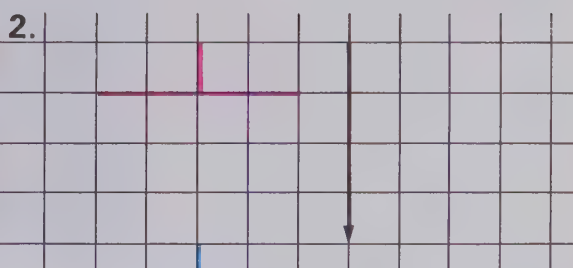
The traced shape matches the blue shape. The blue shape is the **slide image** of the red shape.

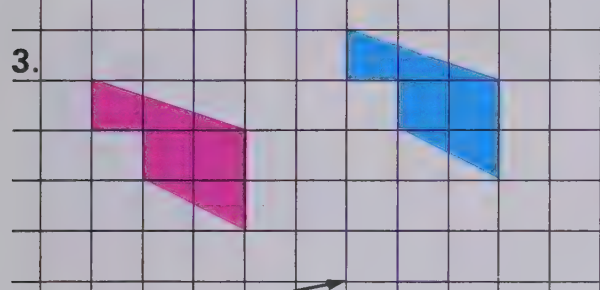



Exercises

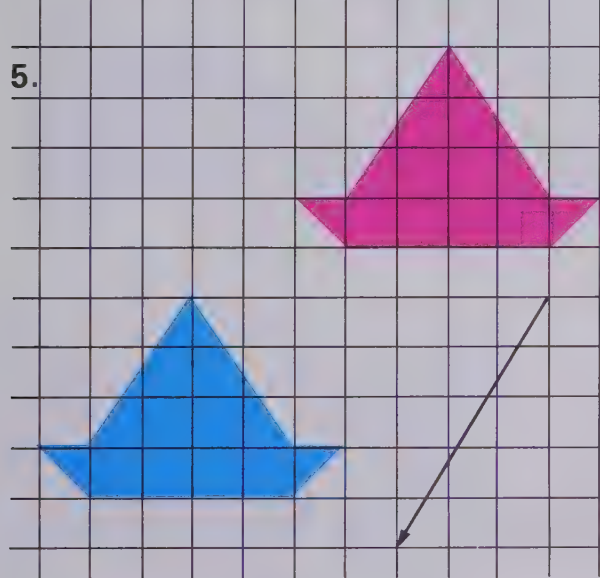
Copy the two shapes and the arrow on graph paper. Then use tracing paper to test whether the blue shape is the slide image of the red shape for the given slide arrow.

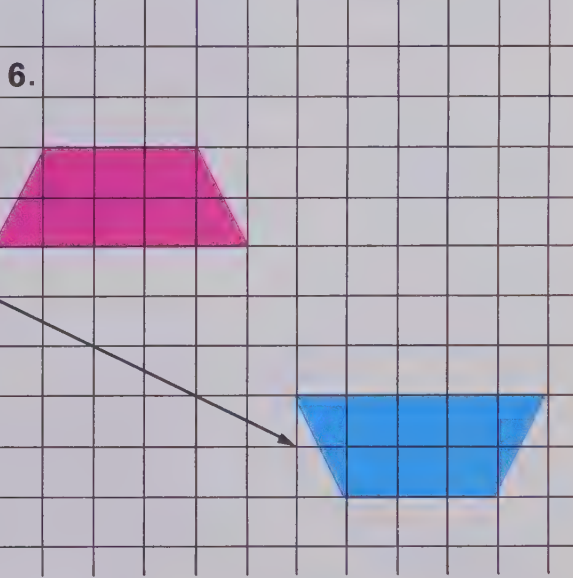
1. 

2. 

3. 

4. 

5. 

6. 

Use graph paper.

- *7. Draw two congruent shapes and a slide arrow. Have a friend use tracing paper to test your picture.

Flips

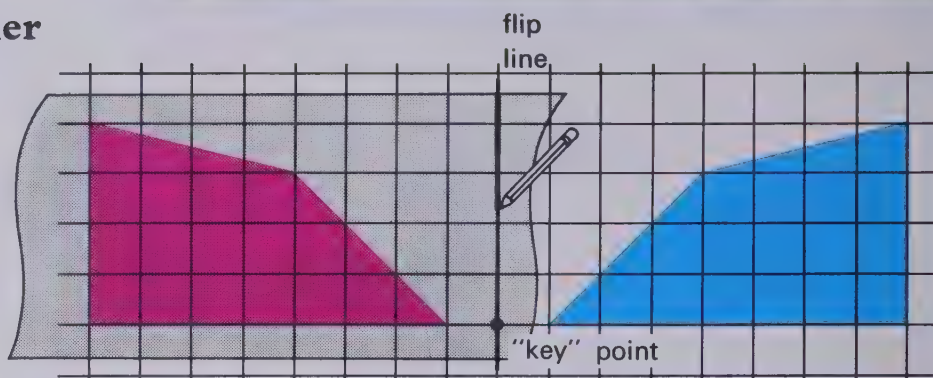
Flip this page
about the line
where these
two pages meet...



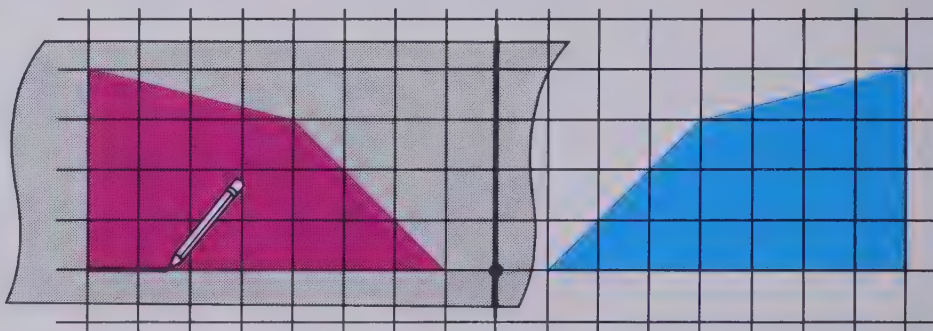
Working Together

Use tracing paper.

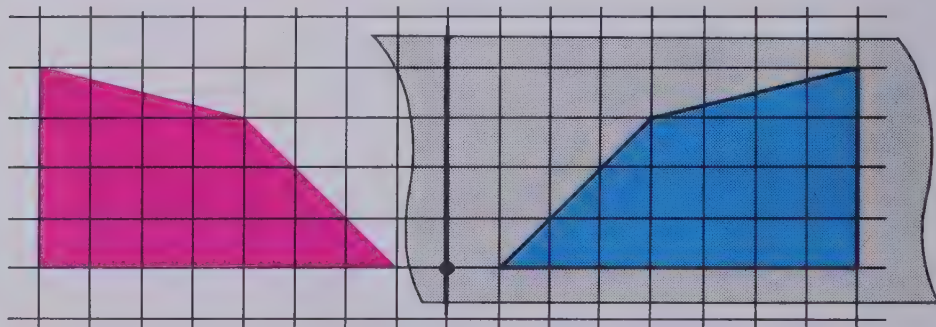
1. Trace the **flip line** and the **"key" point**.



2. Trace the red shape.



3. Flip the tracing over. Match the flip line and the **"key" point** with their tracings.



The traced shape matches the blue shape.
The blue shape is the **flip image** of the red shape.



...and the
two pictures
will match.

Exercises

Copy these pictures on graph paper. Use tracing paper to test whether the blue shape is the flip image of the red shape for the given flip line.

1.

2.

3.

4.

5.

Use graph paper.

*6. Draw two congruent shapes and a flip line. Have a friend use tracing paper to test your picture.

Turns

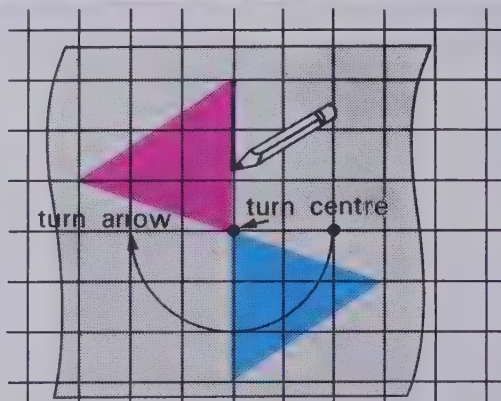
Each swing appears to turn about a point.



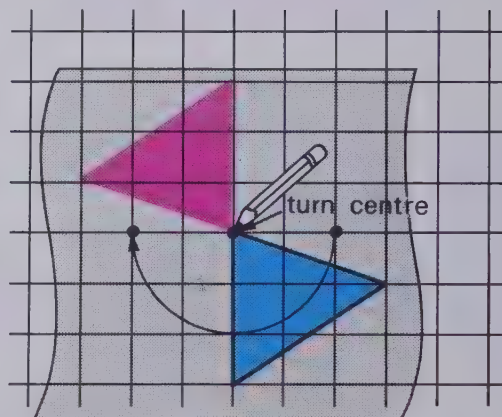
Working Together

Use tracing paper.

1. Mark a dot at the end of the **turn arrow**.
2. Trace the red shape.



3. Place your pencil point on the **turn centre**. Turn the tracing so that the dot moves along the turn arrow. Stop when the dot is on the tip of the turn arrow.



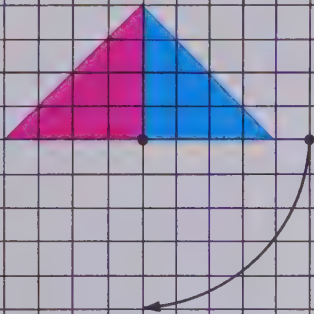
The traced shape matches the blue shape.
The blue shape is the **turn image** of the red shape.

Exercises

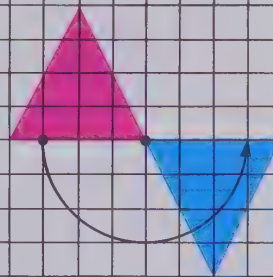
Copy these pictures on graph paper. Use tracing paper to test whether the blue shape is the turn image of the red shape for the given turn centre and turn arrow.

To draw the turn arrow, draw both ends of the arrow carefully, then sketch the curved part.

1.



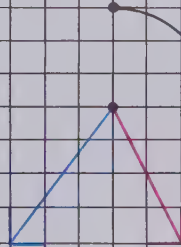
2.



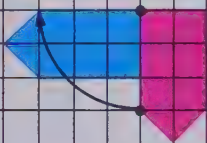
3.



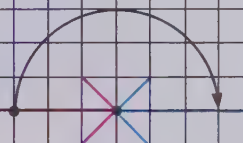
4.



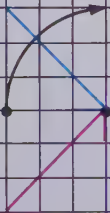
5.



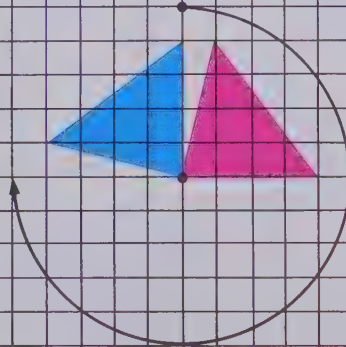
6.



7.



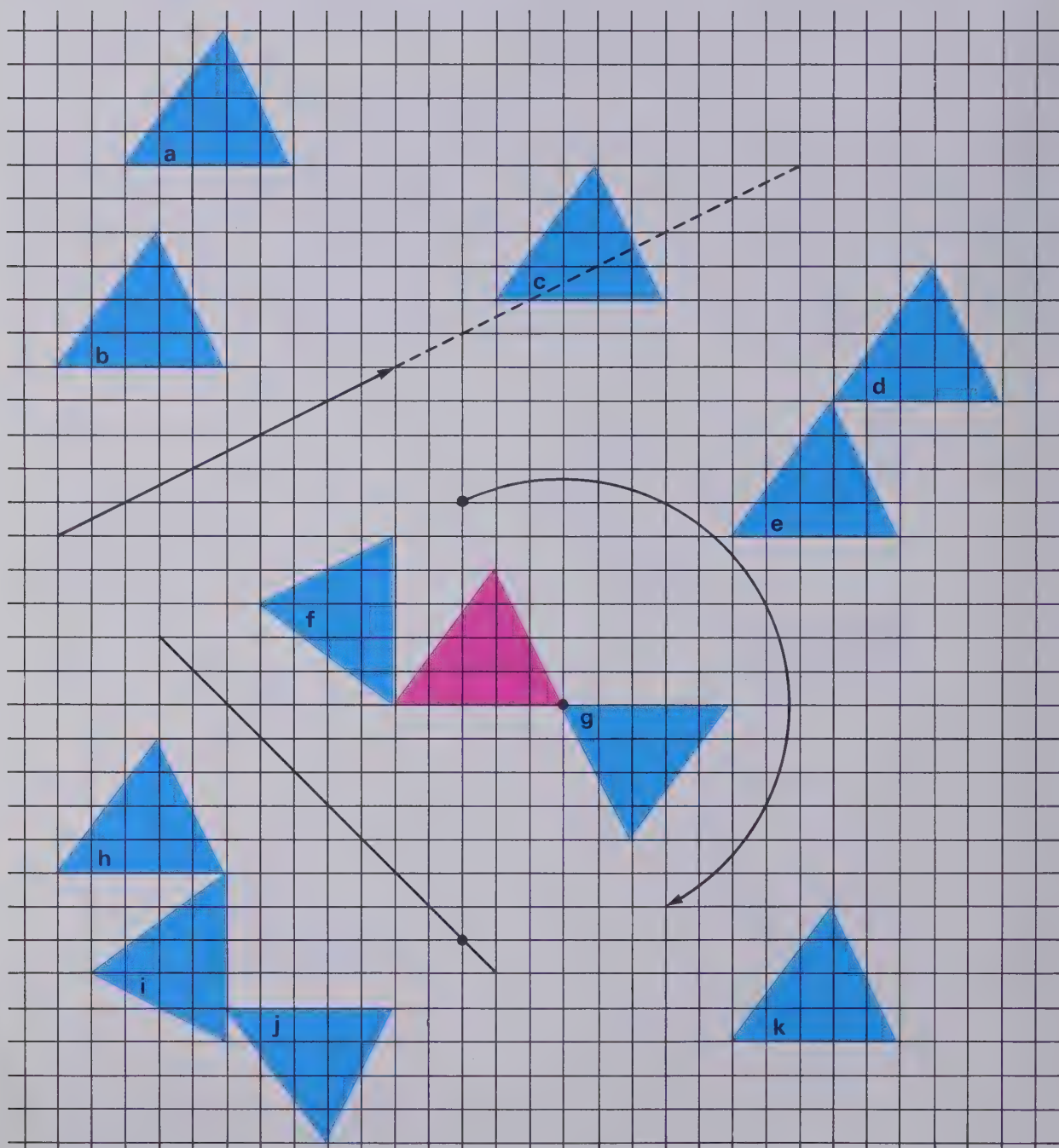
8.



Practice

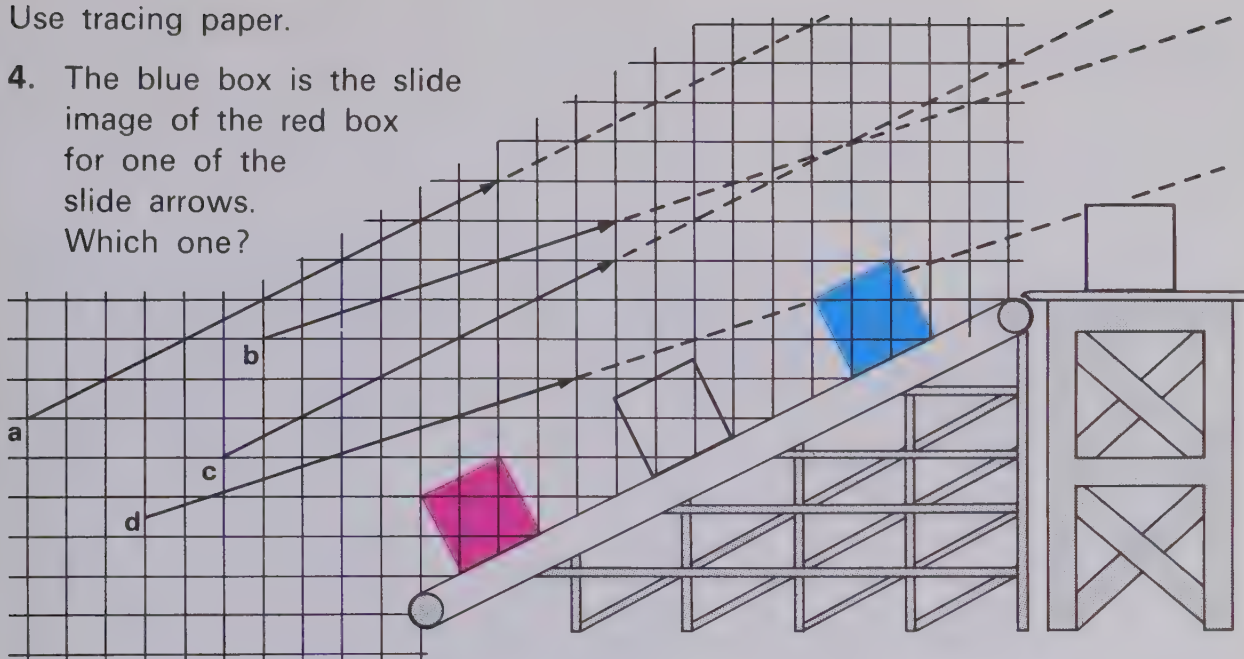
Use tracing paper to help you find

1. the slide image of the red shape for the given slide arrow.
2. the flip image of the red shape for the given flip line.
3. the turn image of the red shape for the given turn centre and turn arrow.

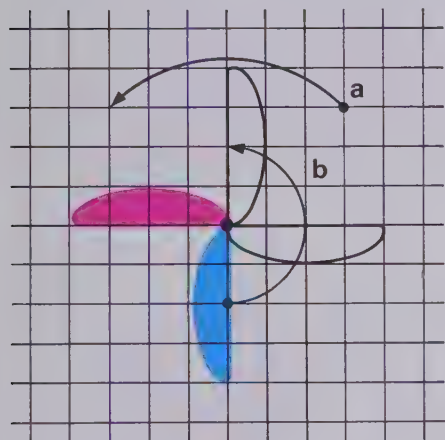


Use tracing paper.

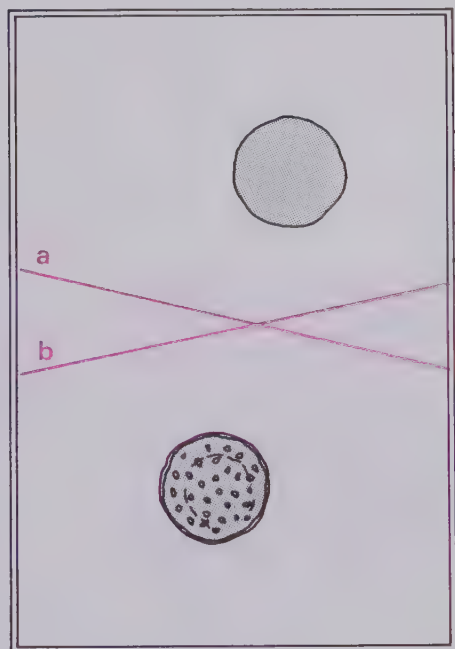
4. The blue box is the slide image of the red box for one of the slide arrows. Which one?



5. The blue propeller blade is the turn image of the red blade for one of the turn arrows. Which one?



6. The cooked pancake is the flip image of the uncooked pancake for one of the lines on the grill. Which one?

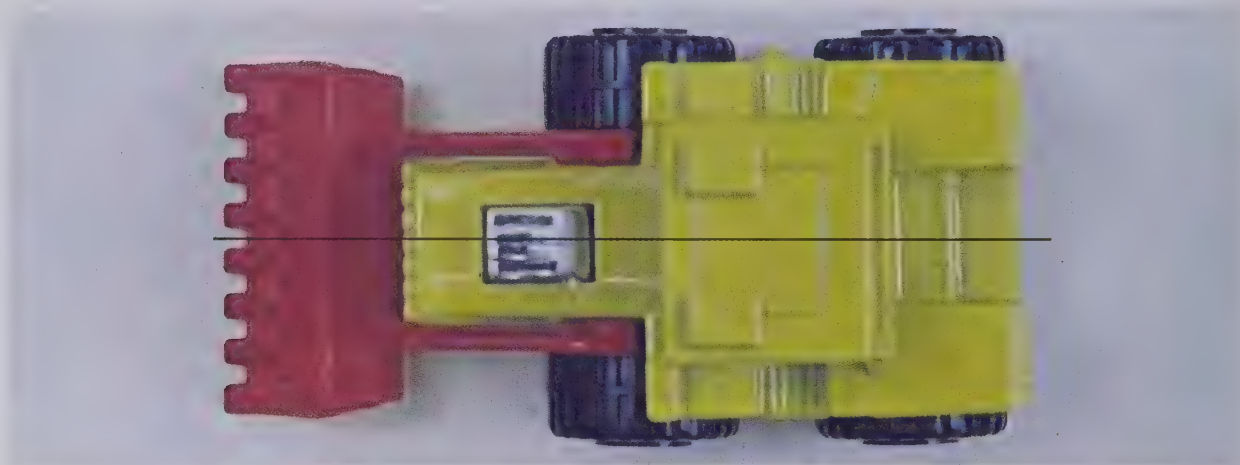


Write a sentence to answer each of these questions.

7. Do you slide, flip, or turn something to get a drink of water?
8. Do you slide, flip, or turn something to open a window?
9. Do you slide, flip, or turn something to play your favorite game?

Flip Lines and Lines of Symmetry

This picture shows line symmetry. The line of symmetry drawn on the picture shows two parts that are alike.

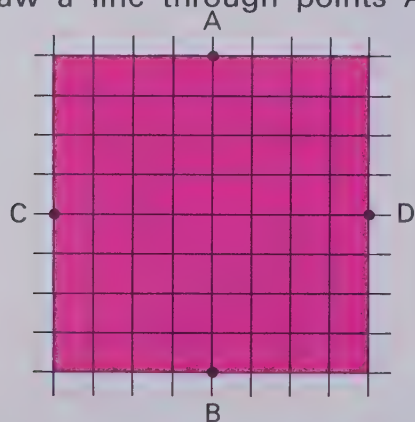


Trace the part of the tractor that is on one side of the line of symmetry. Flip your tracing using the line of symmetry as a flip line.

The tracing will match the other part of the tractor. A line of symmetry is the flip line for the two matching parts.

Working Together

Copy this shape on graph paper and draw a line through points A and B.

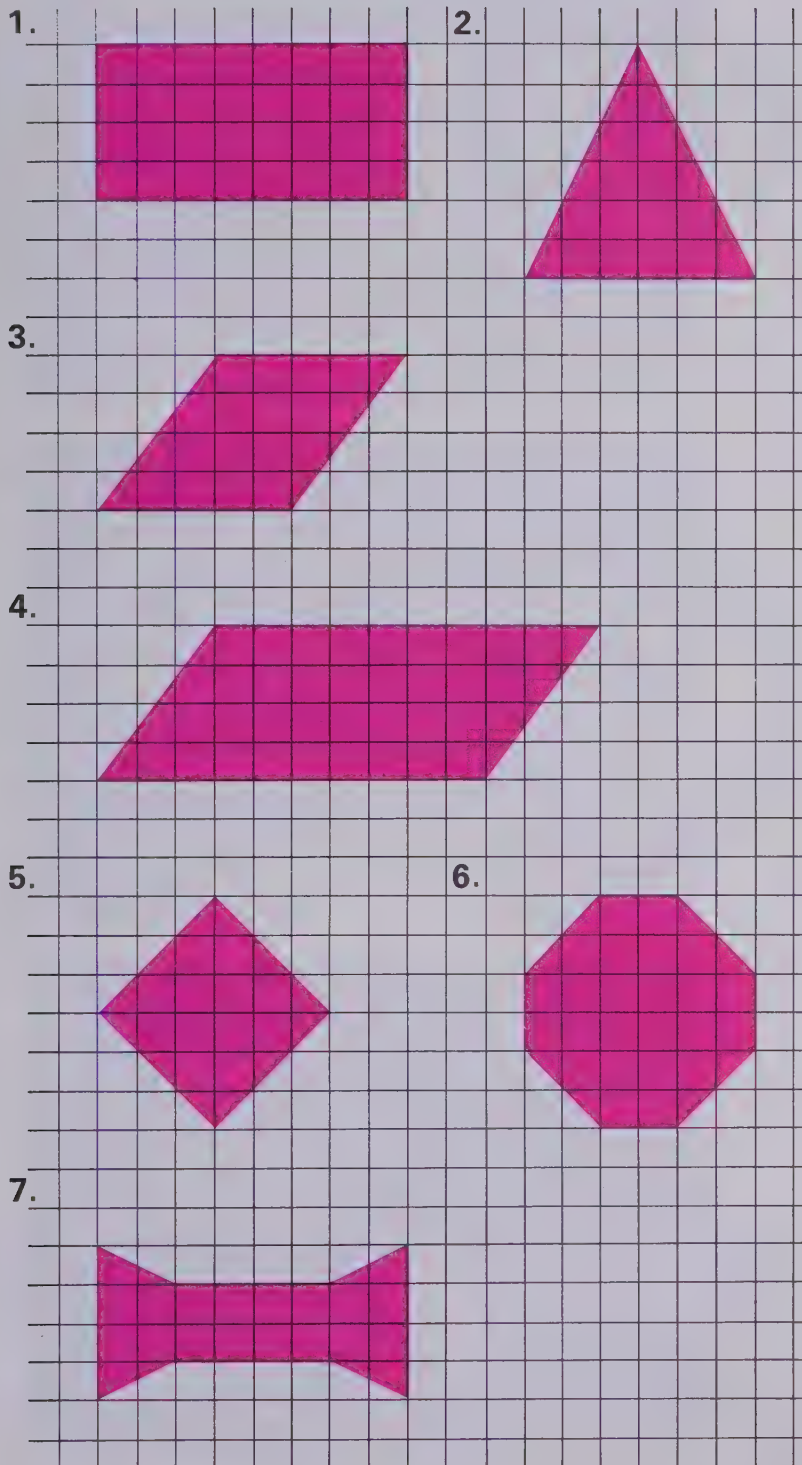


Draw a line through points C and D.

1. Use tracing paper and trace the shape on one side of line AB. Flip the tracing using line AB as the flip line.
2. If your tracing matches the part on the other side of line AB, the shape has line symmetry. Does it?
3. Use a tracing and line CD as a flip line. Is line CD a line of symmetry?
4. Are there other lines of symmetry?
5. How many can you find?

Exercises

Copy these shapes on graph paper. Use tracings to find all the lines of symmetry. Show the lines of symmetry for each shape.



Add or subtract.

1. $7377 - 4126$
2. $3561 + 5123$
3. $1282 + 523$
4. $5724 + 2718$
5. $2863 - 2327$
6. $1385 + 1459$
7. $8251 - 3891$
8. $2327 - 749$
9. $7423 - 4536$
10. $3614 + 2552$
11. $6147 - 1748$
12. $3948 + 367$
13. $4736 + 3569$
14. $5030 - 3981$
15. $6001 - 5069$
16. $3985 + 3767$
17. $7000 - 3486$
18. $382 + 1287 + 276$
19. $8073 - 1279$
20. $\$2420 + \466
21. $\$5830 - \3032
22. $\$369 + \$187 + \$548$
23. $\$4152 - \2985
24. $\$52.64 + \34.61
25. $\$39.27 - \7.65
26. $\$27.91 + \22.97
27. $\$39.75 + \15.85
28. $\$6.00 - \4.13
29. $\$625 + \896

**KEEPING
SHARP**

Checking for Symmetry

Paula uses tracing paper to check for line symmetry.

First,
she traces
a shape.



Then she folds
her tracing and
tries to match
one part of the
shape with the
other part.



If the parts
of the shape on
each fold match,
the shape has
line symmetry.
The fold line
is the line
of symmetry.



Exercises

Trace these shapes. Check for line symmetry by folding your tracings.

1.



2.



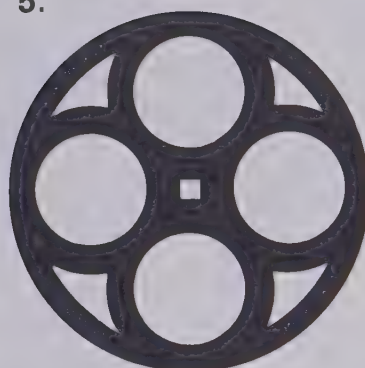
3.



4.



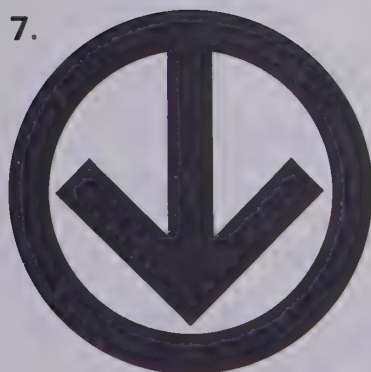
5.



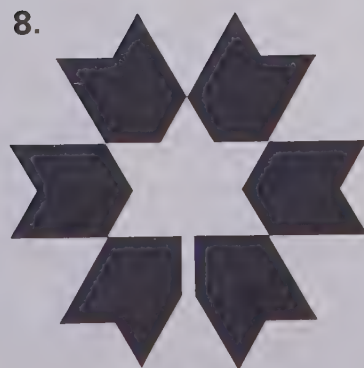
6.



7.



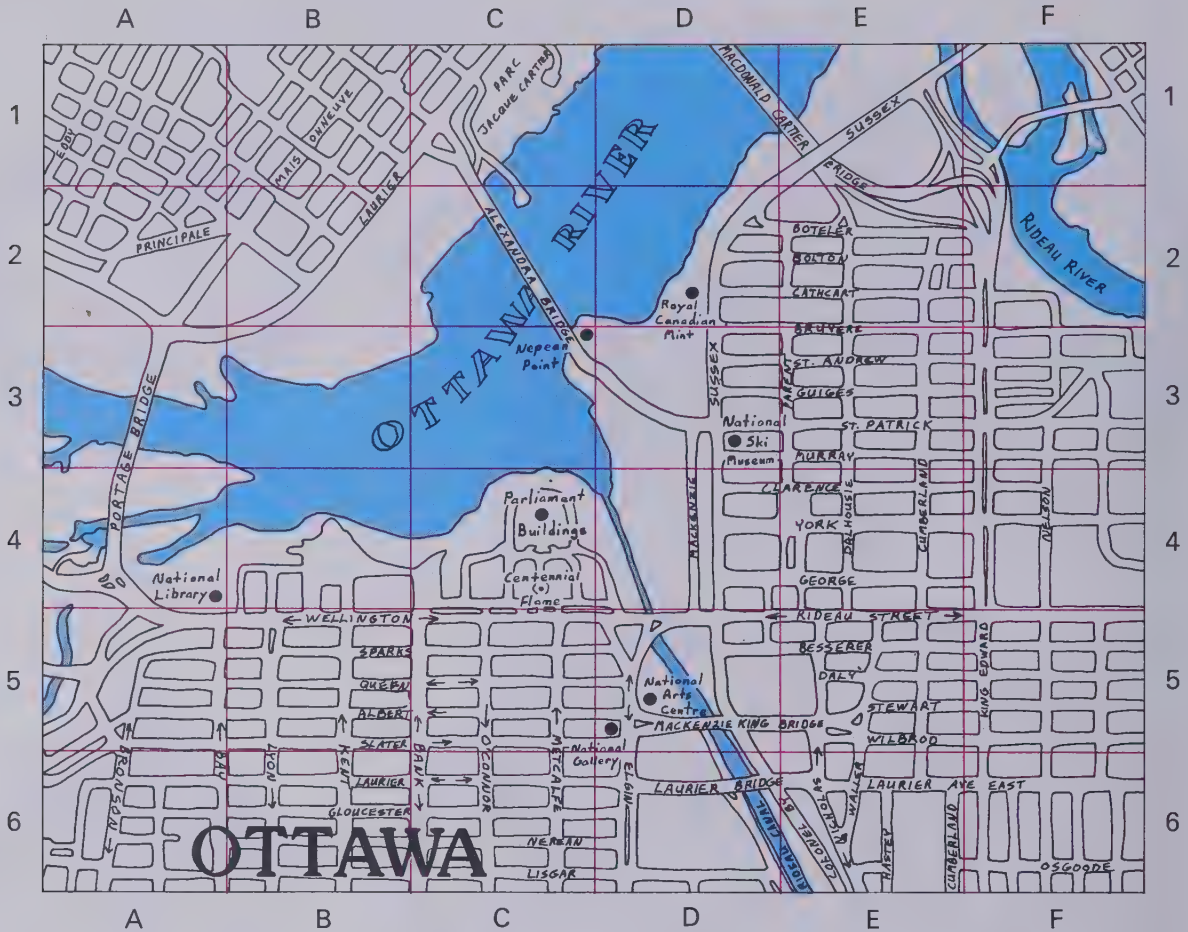
8.



9.



Places on a Map



The map shows part of Ottawa, our nation's capital. The numbers and letters along the edges help locate places on the map.

The letter for the Parliament Buildings is C. The number is 4. The Parliament Buildings are in region (C, 4).

Working Together

Give the letter for

1. Bank Street.
2. the Royal Canadian Mint.

Name the region for

- the Royal Canadian Mint.
- where Bronson Avenue meets Laurier Avenue.

Always
give
the
letter
first.

Give the number for

3. Sparks Street.
4. the Royal Canadian Mint.

Name

7. a bridge in region (A, 3).
8. two streets that meet in region (E, 5).

Exercises

Name the region for

1. the National Arts Centre.
2. Nepean Point.
3. where Metcalfe Street meets Sparks Street.
4. where Sussex Drive meets York Street.
5. the National Library.
6. the National Gallery.
7. the National Ski Museum.
8. the Centennial Flame.
9. where the Rideau Canal meets the Ottawa River.
10. where Rideau Street meets Wellington Street.

Name the regions for

11. Nepean Street.
12. Bay Street.
13. the Rideau Canal.
14. the Laurier Bridge.

Name

15. a street in region (D, 5).
16. two streets in region (B, 5).
17. a bridge in region (D, 1).
18. a curved road in region (D, 2).
19. two streets that meet in region (A, 6).
20. the number of city blocks that are part of region (B, 6).

Use the map on page 162 or some other map.

21. Make up a problem and give it to a friend.

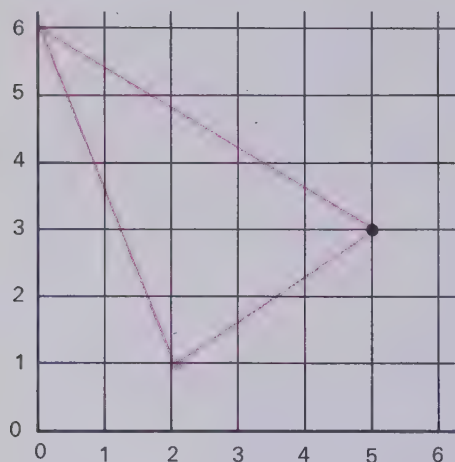
Multiply or divide.

- | | | | | | |
|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 1. 4×2 | 2. $3 \overline{)18}$ | 3. $2 \overline{)4}$ | 4. 3×2 | 5. $2 \overline{)8}$ | 6. $8 \overline{)32}$ |
| 7. $3 \overline{)9}$ | 8. 4×6 | 9. 2×3 | 10. $6 \overline{)6}$ | 11. 6×9 | 12. 3×5 |
| 13. 1×5 | 14. 6×2 | 15. $1 \overline{)4}$ | 16. 8×7 | 17. $4 \overline{)20}$ | 18. 5×7 |
| 19. $6 \overline{)48}$ | 20. $5 \overline{)10}$ | 21. $6 \overline{)30}$ | 22. 2×9 | 23. 4×0 | 24. $8 \overline{)16}$ |
| 25. 1×2 | 26. $6 \overline{)36}$ | 27. 4×4 | 28. $9 \overline{)9}$ | 29. $2 \overline{)12}$ | 30. 2×7 |
| 31. $4 \overline{)12}$ | 32. 9×4 | 33. 5×6 | 34. 8×3 | 35. 2×5 | |
| 36. $6 \overline{)42}$ | 37. 8×6 | 38. 6×8 | 39. $9 \overline{)54}$ | 40. $3 \overline{)24}$ | |
| 41. $8 \overline{)72}$ | 42. $1 \overline{)8}$ | 43. 2×0 | 44. $3 \overline{)12}$ | 45. 5×5 | |
| 46. 9×8 | 47. 0×5 | 48. $9 \overline{)81}$ | 49. 7×7 | 50. $7 \overline{)63}$ | |

**KEEPING
SHARP**

Positions on a Grid

Number pairs can name the points on a grid.



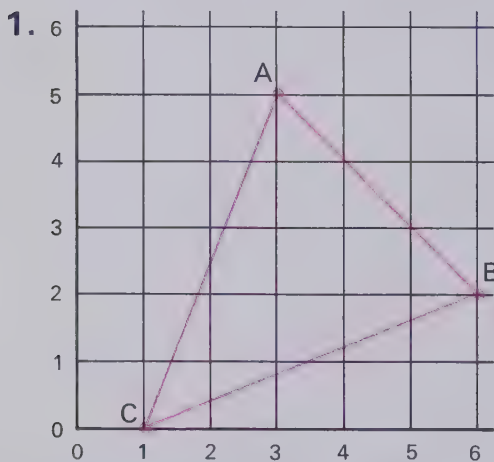
One vertex of the triangle is shown in black. To name it, count over 5 and up 3. (5,3) names the black vertex.

To name a point on a grid with a number pair, count *over* for the first number and count *up* for the second number.

The other vertices of the triangle are named with the number pairs (2,1) and (0,6).

Working Together

Count over, then up to name each vertex of this triangle with a number pair.

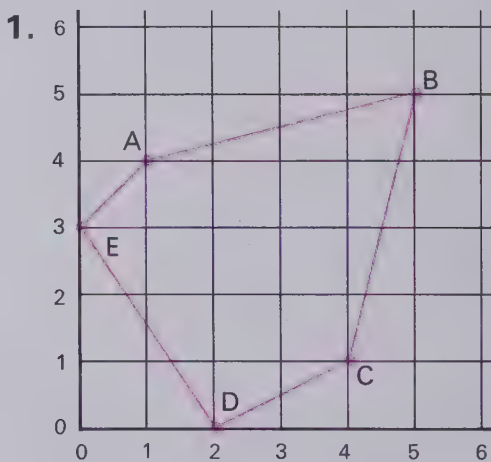


Draw a grid. Number the lines. Connect the points that are named by these number pairs.

2. (2, 4) 3. (0, 0) 4. (7, 1)
5. What polygon did you draw?

Exercises

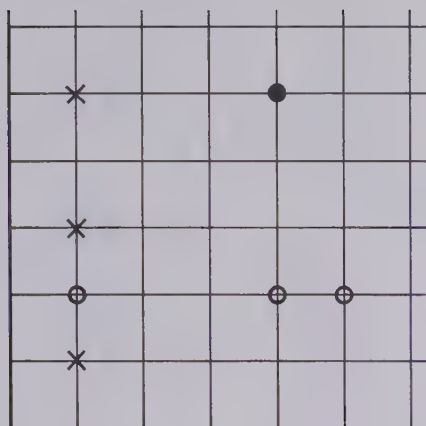
Write a number pair for each vertex of this pentagon.



Draw a grid. Number the lines. Connect the points that are named by these number pairs.

2. (0, 2) 3. (2, 3) 4. (6, 5)
5. Are the points all in line or do they form a triangle?

For this grid,



6. write number pairs for the points marked with \bigcirc . How are these pairs alike?
7. write number pairs for the points marked with \times . How are these pairs alike?

In the above grid,

8. four of the seven points are vertices of a square. Write the number pairs.

Draw a grid. Number the lines. Then draw from point to point to make a shape.

9. Draw $(4,4) \rightarrow (5,2) \rightarrow (1,0) \rightarrow (0,2) \rightarrow (4,4)$
10. Draw $(1,1) \rightarrow (1,3) \rightarrow (3,5) \rightarrow (5,5) \rightarrow (5,3) \rightarrow (3,1) \rightarrow (1,1)$
11. Draw $(6,0) \rightarrow (6,7) \rightarrow (5,7) \rightarrow (5,1) \rightarrow (3,1) \rightarrow (3,3) \rightarrow (2,3) \rightarrow (2,0) \rightarrow (6,0)$
12. What polygons did you draw?

Multiply.

$$\begin{array}{r} 1. \ 20 \\ \underline{} 3 \end{array}$$

$$\begin{array}{r} 2. \ 400 \\ \underline{} 2 \end{array}$$

$$\begin{array}{r} 3. \ 20 \\ \underline{} 6 \end{array}$$

$$\begin{array}{r} 4. \ 40 \\ \underline{} 5 \end{array}$$

$$\begin{array}{r} 5. \ 70 \\ \underline{} 3 \end{array}$$

$$\begin{array}{r} 6. \ 400 \\ \underline{} 7 \end{array}$$

$$\begin{array}{r} 7. \ 60 \\ \underline{} 6 \end{array}$$

$$\begin{array}{r} 8. \ 900 \\ \underline{} 3 \end{array}$$

$$\begin{array}{r} 9. \ 80 \\ \underline{} 5 \end{array}$$

$$\begin{array}{r} 10. \ 500 \\ \underline{} 9 \end{array}$$

$$\begin{array}{r} 11. \ 70 \\ \underline{} 8 \end{array}$$

$$\begin{array}{r} 12. \ 90 \\ \underline{} 7 \end{array}$$

Divide.

$$13. \ 4 \overline{)120}$$

$$14. \ 2 \overline{)40}$$

$$15. \ 3 \overline{)150}$$

$$16. \ 5 \overline{)100}$$

$$17. \ 6 \overline{)240}$$

$$18. \ 3 \overline{)90}$$

$$19. \ 4 \overline{)280}$$

$$20. \ 5 \overline{)250}$$

$$21. \ 9 \overline{)810}$$

$$22. \ 4 \overline{)80}$$

$$23. \ 6 \overline{)540}$$

$$24. \ 7 \overline{)350}$$

$$25. \ 8 \overline{)480}$$

$$26. \ 5 \overline{)400}$$

$$27. \ 9 \overline{)360}$$

$$28. \ 7 \overline{)420}$$

$$29. \ 2 \overline{)60}$$

$$30. \ 8 \overline{)40}$$

Multiply.

$$\begin{array}{r} 31. \ 31 \\ \underline{} 3 \end{array}$$

$$\begin{array}{r} 32. \ 12 \\ \underline{} 4 \end{array}$$

$$\begin{array}{r} 33. \ 36 \\ \underline{} 2 \end{array}$$

$$\begin{array}{r} 34. \ 38 \\ \underline{} 6 \end{array}$$

$$\begin{array}{r} 35. \ 57 \\ \underline{} 5 \end{array}$$

$$\begin{array}{r} 36. \ 85 \\ \underline{} 3 \end{array}$$

$$\begin{array}{r} 37. \ 513 \\ \underline{} 8 \end{array}$$

$$\begin{array}{r} 38. \ 360 \\ \underline{} 5 \end{array}$$

$$\begin{array}{r} 39. \ 602 \\ \underline{} 9 \end{array}$$

$$\begin{array}{r} 40. \ \$145 \\ \underline{} 4 \end{array}$$

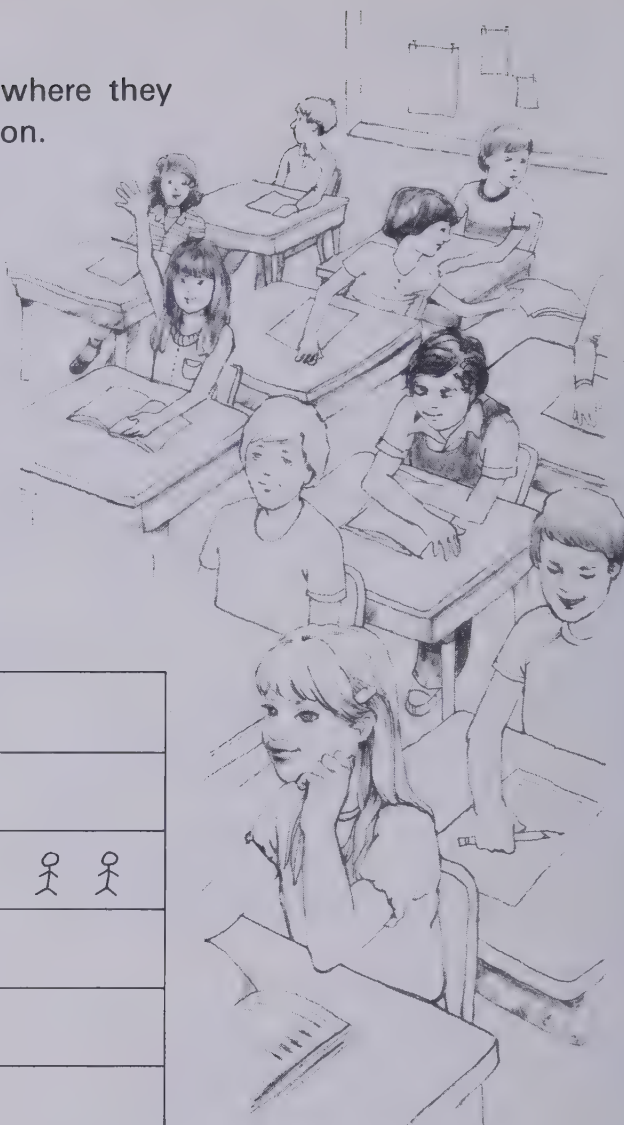
$$\begin{array}{r} 41. \ \$3.87 \\ \underline{} 7 \end{array}$$

KEEPING SHARP

Drawing Pictographs

The students in Room 4B talked about where they were born. They recorded this information.

Place of Birth	Number of Students
Our town	8
Elsewhere in our province	12
In another province	4
In another country	6



Then they drew this pictograph.

BIRTHPLACES FOR OUR CLASS	
Our town	☺ ☺ ☺ ☺
Our province	☺ ☺ ☺ ☺ ☺ ☺
Another province	☺ ☺
Another country	☺ ☺ ☺
☺ stands for 2 students	

Exercises

Draw pictographs for each of these.

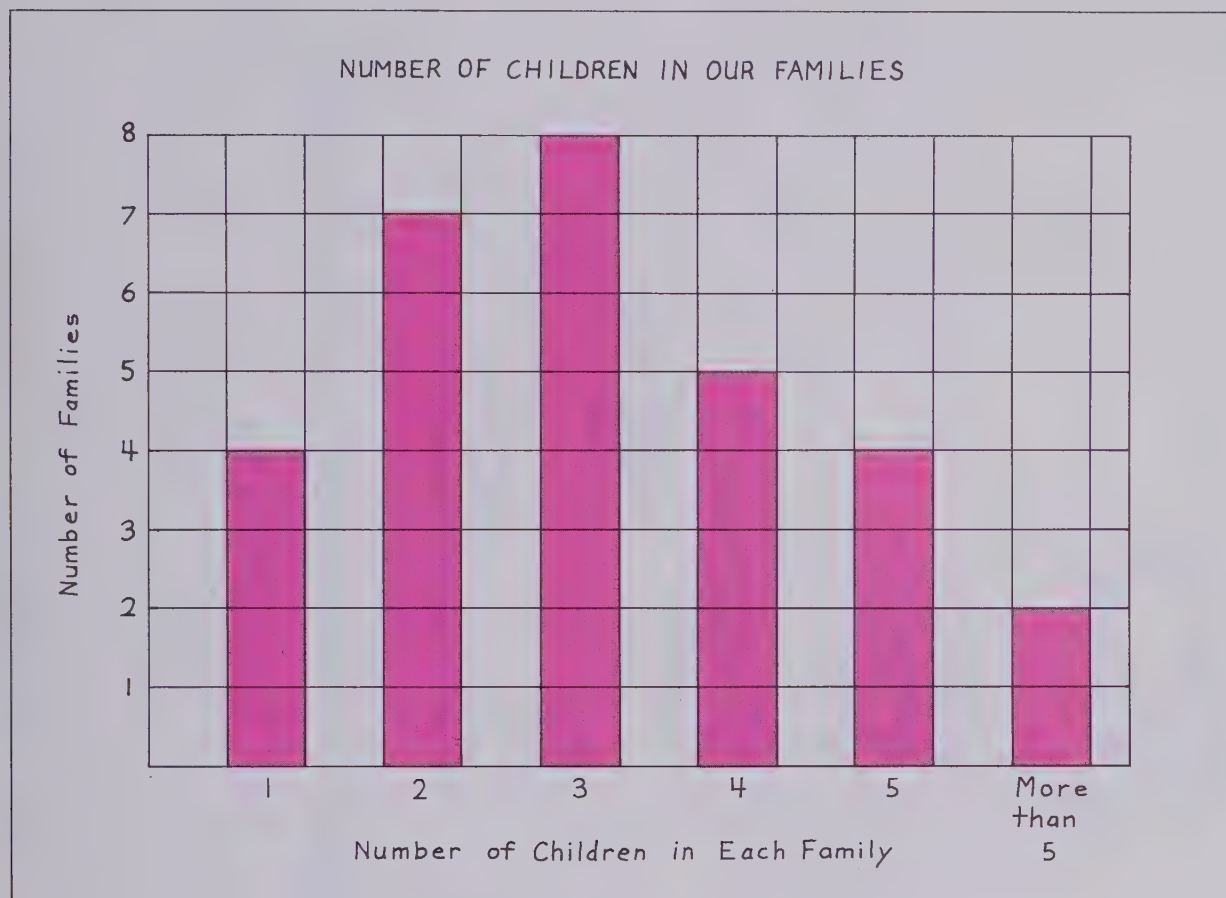
1. the birthplaces for your class
2. 9 children with brown hair, 15 with black hair, and 6 with hair of some other color
3. the color of hair in your class
4. the favorite ways to travel for your class

Think of another kind of information that you could show on a pictograph.

5. Collect the information and draw the pictograph.

Drawing Bar Graphs

The students drew this **bar graph** to show the number of children in their families.



Exercises

Draw bar graphs for each of these.

1. the number of children in the families for your class
2. the number of children in your class who were born in winter, in spring, in summer, in the fall
3. the number of shoes in your classroom with 0 eyelets, 2 eyelets, 4 eyelets, 6 eyelets, and so on
4. the favorite ways to travel for your class

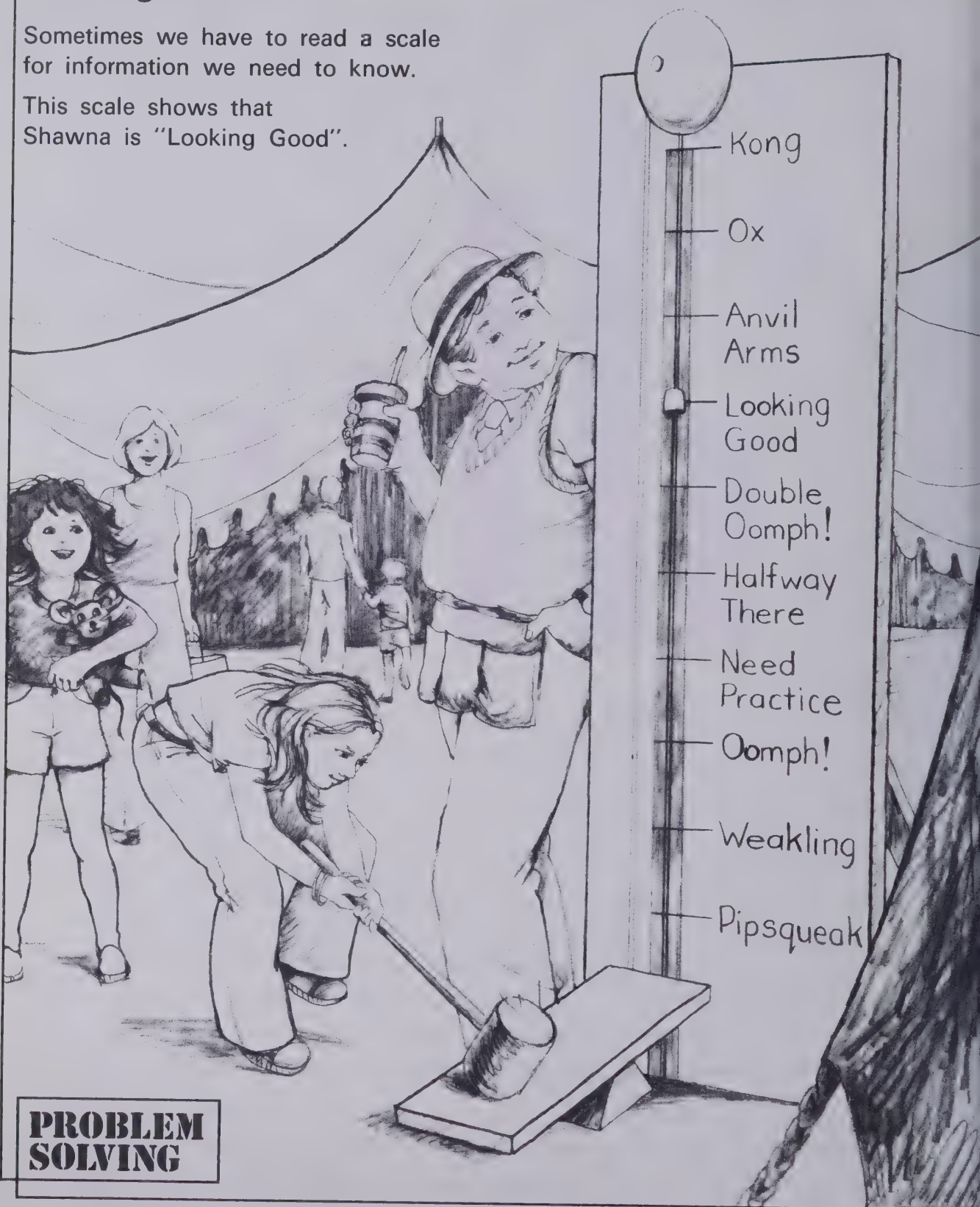
Think of another kind of information that you could show on a bar graph.

5. Collect the information and draw the bar graph.

Reading a Scale

Sometimes we have to read a scale for information we need to know.

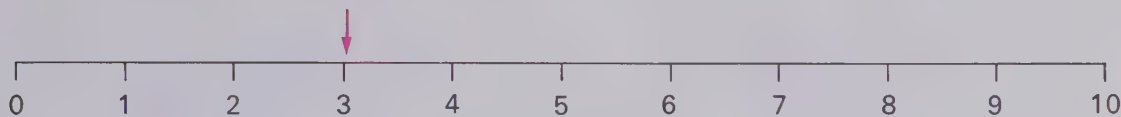
This scale shows that Shawna is "Looking Good".



Exercises

Write the number for the point marked by the arrow on each scale.

1.



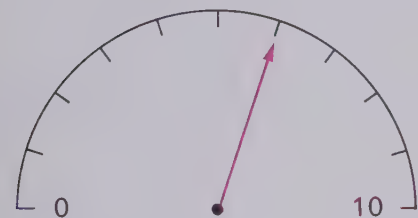
2.



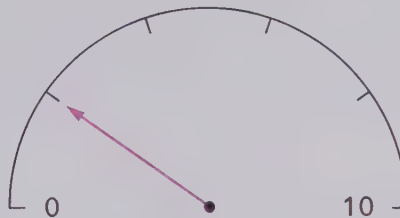
3.



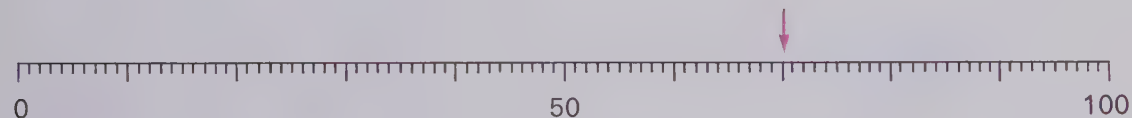
4.



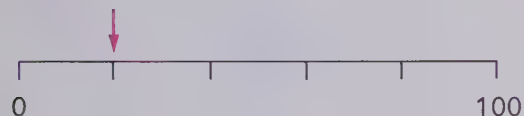
5.



6.



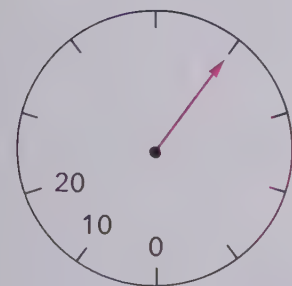
7.



8.



9.



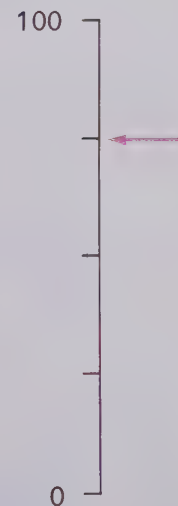
11.



12.



13.

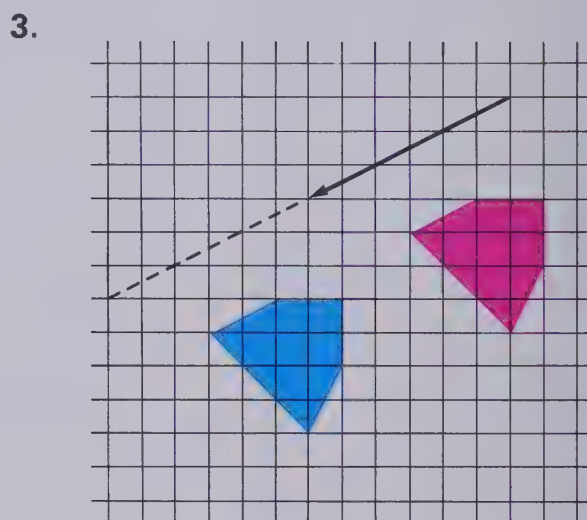
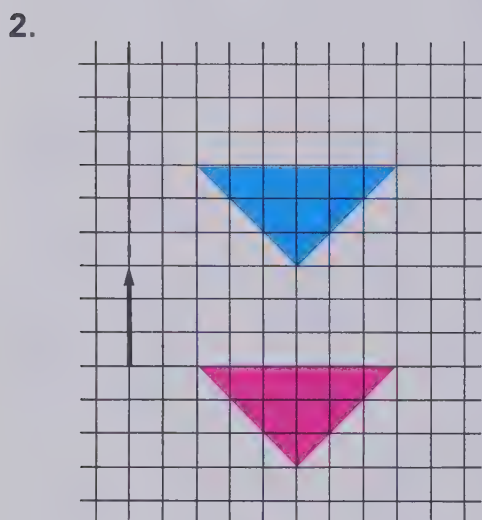
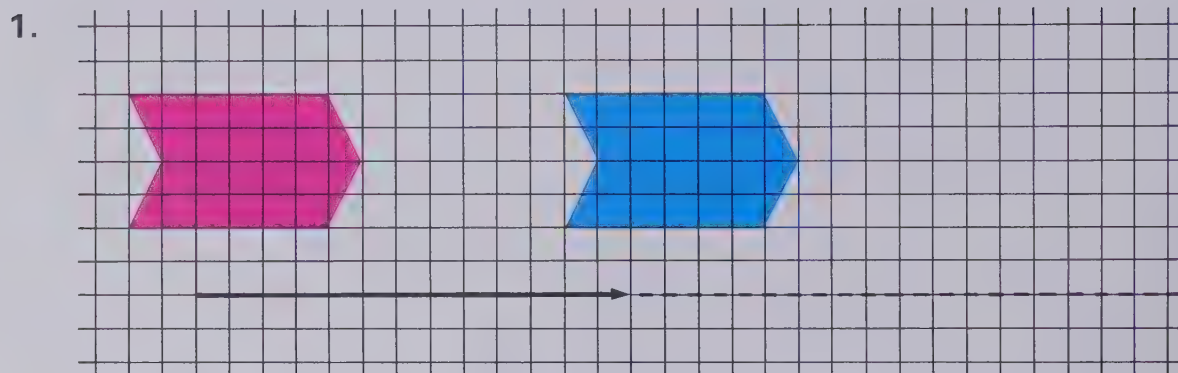


10.

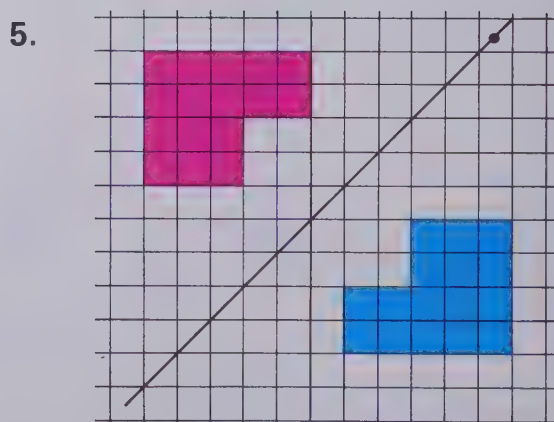
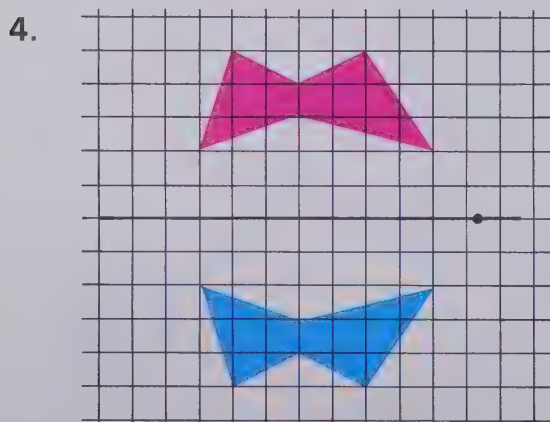


Checking Up

Use tracing paper to test whether the blue shape is the slide image of the red shape for the given slide arrow.

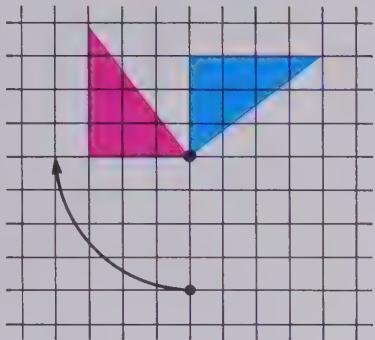


Use tracing paper to test whether the blue shape is the flip image of the red shape for the given flip line.



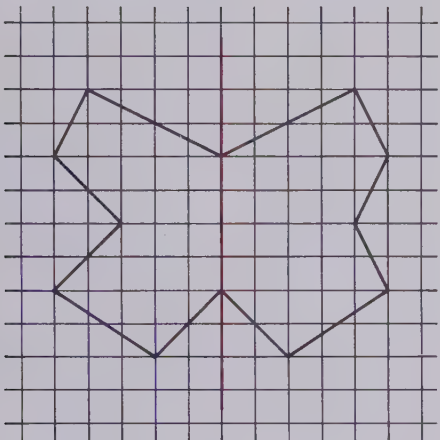
Use tracing paper to test whether the blue shape is the turn image of the red shape for the given turn centre and turn arrow.

6.



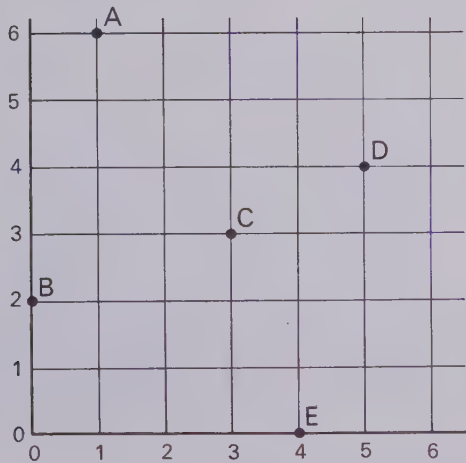
Use tracing paper to test whether the red line is a line of symmetry.

8.

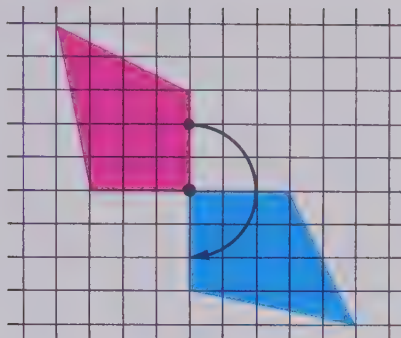


Write a number pair to match each point.

10.

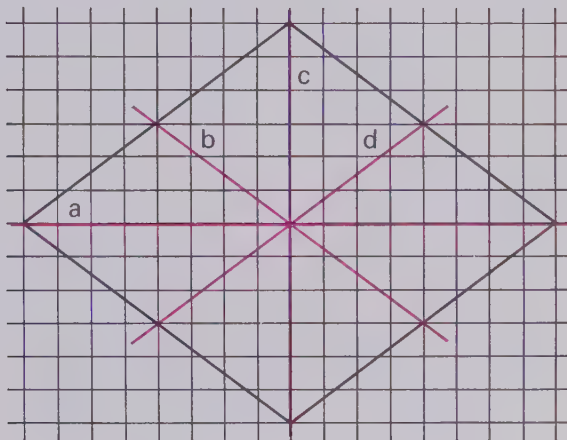


7.



Use tracing paper to find which of the red lines are lines of symmetry.

9.



Draw a grid. Number the lines. Then draw a point to match each number pair.

11. $(0, 3)$

12. $(5, 2)$

13. $(3, 6)$

14. $(1, 0)$

Draw a grid. Number the lines. Then draw from point to point to make a shape.

15. Draw $(6,5) \rightarrow (6,0) \rightarrow (2,0)$
 $\rightarrow (2,5) \rightarrow (6,5)$

16. What polygon did you draw?

Checking Skills

Add.

- | | | |
|---|---|--|
| 1. $\begin{array}{r} 236 \\ 26 \\ \hline \end{array}$ | 2. $\begin{array}{r} 3582 \\ 154 \\ \hline \end{array}$ | 3. $\begin{array}{r} 915 \\ 733 \\ \hline \end{array}$ |
| 4. $\begin{array}{r} 4913 \\ 3367 \\ \hline \end{array}$ | 5. $\begin{array}{r} 646 \\ 259 \\ \hline \end{array}$ | 6. $\begin{array}{r} 1756 \\ 858 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} \$2378 \\ 2848 \\ \hline \end{array}$ | 8. $\begin{array}{r} \$17.62 \\ 2.75 \\ \hline \end{array}$ | 9. $\begin{array}{r} \$37.41 \\ 36.89 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} 1063 \\ 121 \\ 4354 \\ \hline \end{array}$ | 11. $\begin{array}{r} 125 \\ 1365 \\ 2237 \\ \hline \end{array}$ | 12. $\begin{array}{r} 3623 \\ 1584 \\ 2173 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} \$1281 \\ 476 \\ 540 \\ \hline \end{array}$ | 14. $\begin{array}{r} \$12.89 \\ 21.35 \\ 9.76 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$ 3.78 \\ 18.98 \\ 28.56 \\ \hline \end{array}$ |

Subtract.

- | | | |
|---|---|---|
| 16. $\begin{array}{r} 293 \\ 157 \\ \hline \end{array}$ | 17. $\begin{array}{r} 2804 \\ 622 \\ \hline \end{array}$ | 18. $\begin{array}{r} 6167 \\ 2415 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 2274 \\ 856 \\ \hline \end{array}$ | 20. $\begin{array}{r} 495 \\ 198 \\ \hline \end{array}$ | 21. $\begin{array}{r} 8318 \\ 3692 \\ \hline \end{array}$ |
| 22. $\begin{array}{r} 6335 \\ 5596 \\ \hline \end{array}$ | 23. $\begin{array}{r} 1426 \\ 457 \\ \hline \end{array}$ | 24. $\begin{array}{r} 3510 \\ 2915 \\ \hline \end{array}$ |
| 25. $\begin{array}{r} 5000 \\ 1639 \\ \hline \end{array}$ | 26. $\begin{array}{r} 7051 \\ 4156 \\ \hline \end{array}$ | 27. $\begin{array}{r} 7203 \\ 3375 \\ \hline \end{array}$ |
| 28. $\begin{array}{r} \$1003 \\ 298 \\ \hline \end{array}$ | 29. $\begin{array}{r} \$861 \\ 297 \\ \hline \end{array}$ | 30. $\begin{array}{r} \$4344 \\ 2468 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} \$8.44 \\ 1.73 \\ \hline \end{array}$ | 32. $\begin{array}{r} \$83.71 \\ 47.88 \\ \hline \end{array}$ | 33. $\begin{array}{r} \$70.00 \\ 64.84 \\ \hline \end{array}$ |

Multiply.

- | | | |
|---|---|--|
| 1. $\begin{array}{r} 30 \\ 3 \\ \hline \end{array}$ | 2. $\begin{array}{r} 20 \\ 4 \\ \hline \end{array}$ | 3. $\begin{array}{r} 60 \\ 2 \\ \hline \end{array}$ |
| 4. $\begin{array}{r} 30 \\ 5 \\ \hline \end{array}$ | 5. $\begin{array}{r} 50 \\ 6 \\ \hline \end{array}$ | 6. $\begin{array}{r} 600 \\ 4 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 30 \\ 7 \\ \hline \end{array}$ | 8. $\begin{array}{r} 800 \\ 3 \\ \hline \end{array}$ | 9. $\begin{array}{r} 70 \\ 5 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} 700 \\ 6 \\ \hline \end{array}$ | 11. $\begin{array}{r} 40 \\ 8 \\ \hline \end{array}$ | 12. $\begin{array}{r} 70 \\ 7 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 90 \\ 8 \\ \hline \end{array}$ | 14. $\begin{array}{r} 700 \\ 9 \\ \hline \end{array}$ | 15. $\begin{array}{r} 90 \\ 2 \\ \hline \end{array}$ |

Divide.

- | | | |
|-------------------------|-------------------------|-------------------------|
| 16. $2 \overline{)160}$ | 17. $3 \overline{)60}$ | 18. $5 \overline{)50}$ |
| 19. $3 \overline{)120}$ | 20. $4 \overline{)360}$ | 21. $4 \overline{)160}$ |
| 22. $8 \overline{)240}$ | 23. $6 \overline{)180}$ | 24. $7 \overline{)280}$ |
| 25. $8 \overline{)560}$ | 26. $5 \overline{)450}$ | 27. $9 \overline{)270}$ |
| 28. $7 \overline{)140}$ | 29. $9 \overline{)720}$ | 30. $6 \overline{)360}$ |

Solve.

31. A bag holds 60 biscuits. How many biscuits are in 9 bags?
32. 480 post cards are kept in 6 boxes. Each box has the same number of cards. How many are in each box?
33. The hobby shop sells 200 stamps in each packet. How many stamps are in 5 packets?

Multiply.

- | | | |
|--|--|--|
| 1. $\begin{array}{r} 23 \\ \underline{2} \end{array}$ | 2. $\begin{array}{r} 310 \\ \underline{3} \end{array}$ | 3. $\begin{array}{r} 12 \\ \underline{4} \end{array}$ |
| 4. $\begin{array}{r} 14 \\ \underline{7} \end{array}$ | 5. $\begin{array}{r} 231 \\ \underline{4} \end{array}$ | 6. $\begin{array}{r} 107 \\ \underline{5} \end{array}$ |
| 7. $\begin{array}{r} 32 \\ \underline{9} \end{array}$ | 8. $\begin{array}{r} 53 \\ \underline{8} \end{array}$ | 9. $\begin{array}{r} 640 \\ \underline{2} \end{array}$ |
| 10. $\begin{array}{r} 391 \\ \underline{8} \end{array}$ | 11. $\begin{array}{r} 738 \\ \underline{6} \end{array}$ | 12. $\begin{array}{r} 465 \\ \underline{5} \end{array}$ |
| 13. $\begin{array}{r} 571 \\ \underline{9} \end{array}$ | 14. $\begin{array}{r} 54 \\ \underline{6} \end{array}$ | 15. $\begin{array}{r} 729 \\ \underline{7} \end{array}$ |
| 16. $\begin{array}{r} 498 \\ \underline{3} \end{array}$ | 17. $\begin{array}{r} 42 \\ \underline{8} \end{array}$ | 18. $\begin{array}{r} 38 \\ \underline{5} \end{array}$ |
| 19. $\begin{array}{r} 507 \\ \underline{4} \end{array}$ | 20. $\begin{array}{r} 694 \\ \underline{9} \end{array}$ | 21. $\begin{array}{r} 612 \\ \underline{6} \end{array}$ |
| 22. $\begin{array}{r} \$265 \\ \underline{3} \end{array}$ | 23. $\begin{array}{r} \$715 \\ \underline{2} \end{array}$ | 24. $\begin{array}{r} \$922 \\ \underline{5} \end{array}$ |
| 25. $\begin{array}{r} \$8.06 \\ \underline{7} \end{array}$ | 26. $\begin{array}{r} \$8.49 \\ \underline{4} \end{array}$ | 27. $\begin{array}{r} \$7.80 \\ \underline{9} \end{array}$ |
| 28. $\begin{array}{r} \$0.96 \\ \underline{6} \end{array}$ | 29. $\begin{array}{r} \$8.65 \\ \underline{8} \end{array}$ | 30. $\begin{array}{r} \$4.62 \\ \underline{7} \end{array}$ |

Solve.

31. There were 288 apples in one carton. How many apples were in 6 cartons?
32. Each jug of milk cost \$1.45. How much did Barbara spend for 3 jugs of milk?

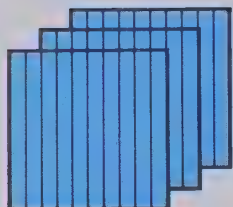
Solve.

1. Fern had 277 insects in her collection. Last summer she collected 86 more. Now how many does she have?
2. The scales showed 1845 kg for the empty truck and 2820 kg when the truck was loaded. How heavy was the load?
3. There are 70 biscuits in each box. How many biscuits are there in 8 boxes?
4. Elsa, Rae, and Meg collected 210 rocks that they shared. How many rocks did each get?
5. Toby charged \$3.19 for each kilogram of maple syrup. How much did he get for 7 kg?
6. Elliott's grocery bill was \$15.48. How much change did he get from \$20.00?
7. Lettered T-shirts cost \$6.95. Yuri and Michel each bought one. How much did they spend?
8. A jacket costs \$24.98. A pair of skates costs \$5.00 more. How much do the jacket and the skates cost together?
9. At an "88¢ Sale", Russ bought 5 models and 2 brushes. He paid 88¢ for each item. How much did he spend in all?
10. Audrey is 9 years old today. 7 of the years had 365 d (days). 2 of the years had 366 d. How many days has it been since Audrey was born?

8 DECIMALS

Using Decimals to Show Wholes and Tenths

3 wholes



2 of 10 equal parts
of another whole

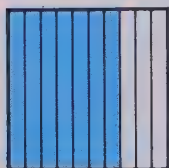


$$3\frac{2}{10} \text{ or } 3.2$$

three and two-tenths

0 wholes

7 of 10 equal parts



$$\frac{7}{10} \text{ or } 0.7$$

seven-tenths
or
zero and seven-tenths

3.2 and **0.7** are **decimals**.

The **.** is a **decimal point**.

Use the word *and*
for the decimal point.
1.6 is one *and* six-tenths.

A decimal with one digit to the right
of the decimal point is a **one-place decimal**.

A one-place decimal shows how many wholes
and how many tenths of another whole.

Working Together

How many wholes? How many tenths?
Give the one-place decimal.



Write the decimals.

3. eight-tenths
4. four and one-tenth

Write the words.

5. 2.7 6. 11.1 7. 0.9

Exercises

How many wholes? How many tenths?
Write the one-place decimal.



Write the decimals.

5. one and nine-tenths
6. three-tenths
7. two and one-tenth
8. three and four-tenths
9. six-tenths
10. ten and two-tenths
11. thirteen and seven-tenths

Write the words.

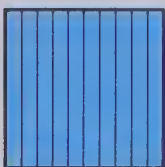
12. 4.3 13. 0.8 14. 5.5
15. 0.1 16. 12.6 17. 14.9

Write the decimals.

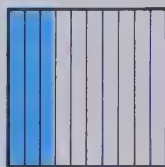
18. Colin rode three
and four-tenths kilometres.
19. Diana painted four of the
ten sections of the fence.

Using Decimals to Show Wholes and Hundredths

1 whole

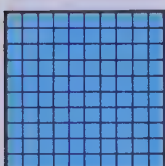


3 of 10 equal parts
of another whole

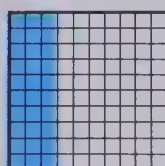


$$1\frac{3}{10} \text{ or } 1.3$$

1 whole



30 of 100 equal parts
of another whole



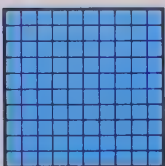
$$1\frac{30}{100} \text{ or } 1.30$$

one and thirty-hundredths

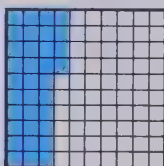
1.30 is a **two-place decimal**.

A two-place decimal has two digits to the right of the decimal point and shows how many hundredths.

1 whole



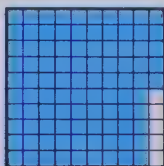
34 hundredths



$$1\frac{34}{100} \text{ or } 1.34$$

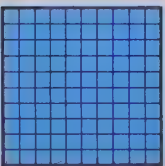
0 wholes

95 hundredths

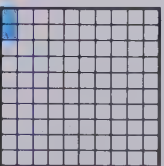


$$\frac{95}{100} \text{ or } 0.95$$

1 whole



2 hundredths

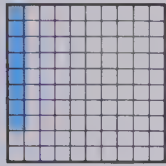
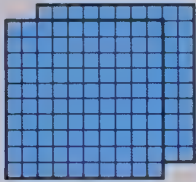


$$1\frac{2}{100} \text{ or } 1.02$$

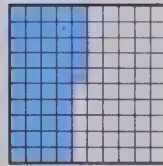
Working Together

How many wholes? How many hundredths?
Give the two-place decimal.

1.



2.



Write the decimals.

3. twenty-five hundredths

4. three and seven-hundredths

Write the words.

5. 0.75

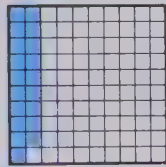
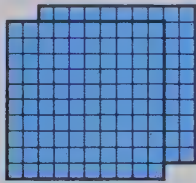
6. 2.04

7. 0.07

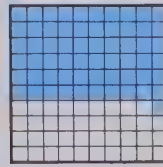
Exercises

How many wholes? How many hundredths?
Write the two-place decimal.

1.



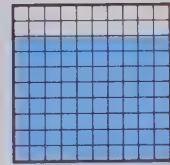
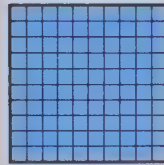
2.



3.



4.



Write the decimals.

5. four and fifty-hundredths

6. two and twenty-eight hundredths

7. eighty-nine hundredths

8. seven and one-hundredth

9. five-hundredths

10. ten and fifteen-hundredths

11. twelve and seventy-hundredths

Write the words.

12. 1.55

13. 0.11

14. 4.20

15. 0.06

16. 13.36

17. 11.09

Write the decimals.

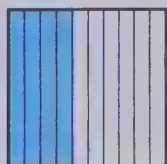
18. The soap is said to be ninety-nine hundredths pure.

19. A nickel is five-hundredths of a dollar.

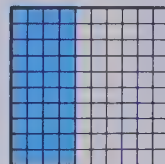
Relating Hundredths and Tenths

Both pictures show the same amount.

4 tenths



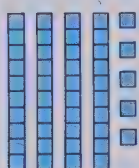
40 hundredths



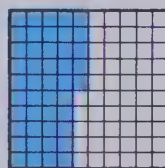
4 tenths is the same as 40 hundredths.

$$0.4 = 0.40$$

4 tenths and 5 hundredths



45 hundredths

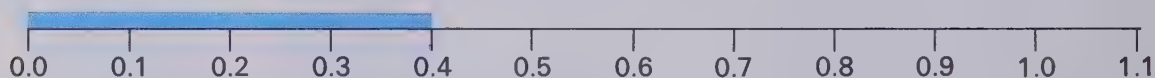


4 tenths and 5 hundredths is the same as 45 hundredths.

ones	tenths	hundredths
0	4	5

is the same as **0.45**.

These two number lines show 0.4 and 0.40.



$$0.4 = 0.40$$



This number line shows 0.45.



4 tenths and 5 hundredths
or 45 hundredths

Working Together

Complete.

1. 7 tenths = 70 hundredths
2. 2 tenths = 20 hundredths
3. 50 hundredths = 5 tenths
4. 0.25 shows 2 tenths 5 hundredths,
or 25 hundredths.
5. 0.16 shows 1 tenth 6 hundredths,
or 16 hundredths.

Exercises

Write each of these as hundredths.

1. 0.8 2. 0.1 3. 0.9
4. 0.3 5. 0.6 6. 0.2

Write each of these as tenths.

7. 0.60 8. 0.30 9. 0.80
10. 0.70 11. 0.10 12. 0.90

Complete the sentences.

13. 0.58 shows 5 tenths 8 hundredths,
or 58 hundredths.
14. 0.30 shows 3 tenths 0 hundredths,
or 30 hundredths.
15. 0.09 shows 0 tenths 9 hundredths,
or 9 hundredths.
16. 3.50 shows 3 ones 5 tenths
0 hundredths, or 3 and 50 hundredths.

Write each as a one-place decimal.

17. 3.20 18. 9.30 19. 2.40
20. 7.70 21. 12.10 22. 13.50

Write each as a two-place decimal.

23. 1.7 24. 6.4 25. 4.5
26. 10.1 27. 5.2 28. 11.8

Add.

- | | |
|---|---|
| 1. $\begin{array}{r} 36 \\ 16 \\ \hline \end{array}$ | 2. $\begin{array}{r} 43 \\ 86 \\ \hline \end{array}$ |
| 3. $\begin{array}{r} 86 \\ 77 \\ \hline \end{array}$ | 4. $\begin{array}{r} 125 \\ 88 \\ \hline \end{array}$ |
| 5. $\begin{array}{r} 192 \\ 655 \\ \hline \end{array}$ | 6. $\begin{array}{r} 277 \\ 375 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 788 \\ 439 \\ \hline \end{array}$ | 8. $\begin{array}{r} 5933 \\ 647 \\ \hline \end{array}$ |
| 9. $\begin{array}{r} 4566 \\ 4742 \\ \hline \end{array}$ | 10. $\begin{array}{r} 4487 \\ 2949 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 1207 \\ 3275 \\ \hline 318 \end{array}$ | 12. $\begin{array}{r} 1823 \\ 746 \\ \hline 2614 \end{array}$ |

Subtract.

- | | |
|---|---|
| 13. $\begin{array}{r} 584 \\ 55 \\ \hline \end{array}$ | 14. $\begin{array}{r} 750 \\ 364 \\ \hline \end{array}$ |
| 15. $\begin{array}{r} 471 \\ 285 \\ \hline \end{array}$ | 16. $\begin{array}{r} 900 \\ 278 \\ \hline \end{array}$ |
| 17. $\begin{array}{r} 4200 \\ 352 \\ \hline \end{array}$ | 18. $\begin{array}{r} 3637 \\ 674 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 6717 \\ 3946 \\ \hline \end{array}$ | 20. $\begin{array}{r} 9620 \\ 5727 \\ \hline \end{array}$ |
| 21. $\begin{array}{r} 9000 \\ 3415 \\ \hline \end{array}$ | |
| 22. $\begin{array}{r} 7050 \\ 2681 \\ \hline \end{array}$ | |

**KEEPING
SHARP**

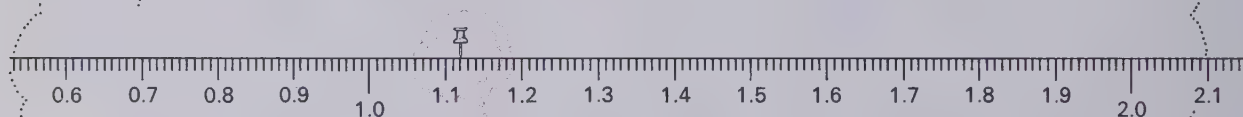
Practice

The pushpin is near 1 on this scale showing ones.



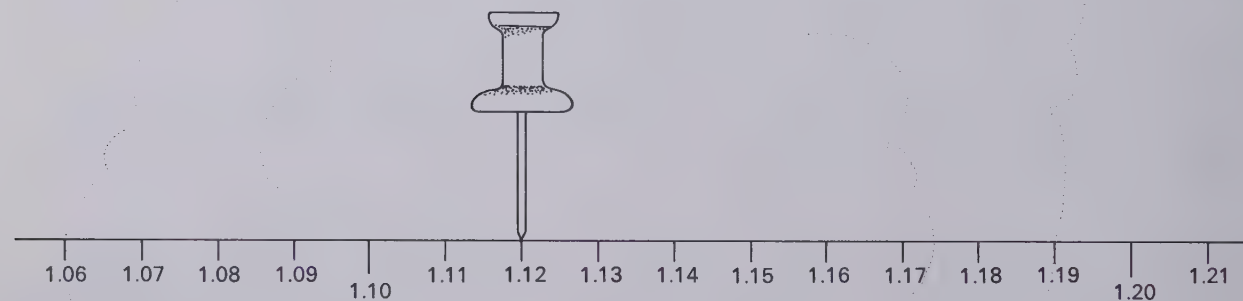
Have a
closer look.

The pushpin is near 1.1 on
this scale showing tenths.



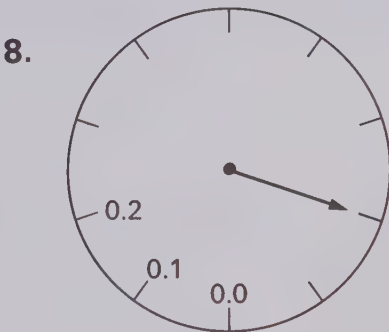
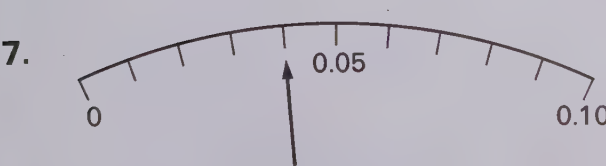
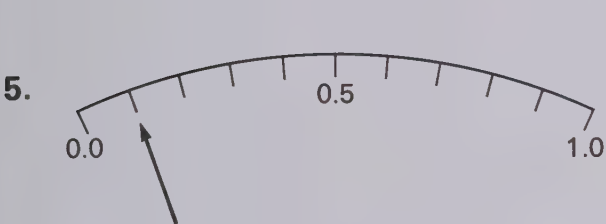
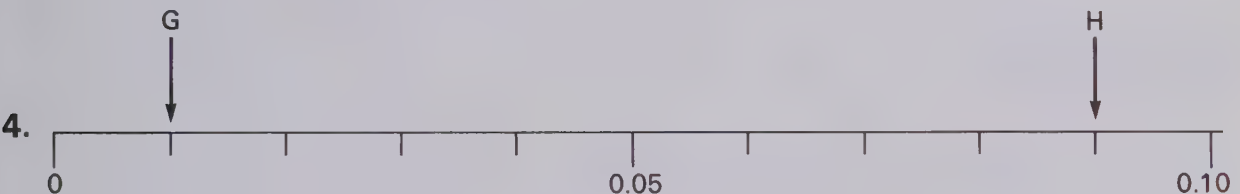
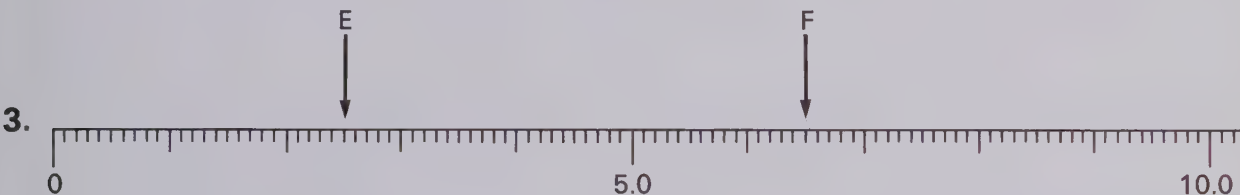
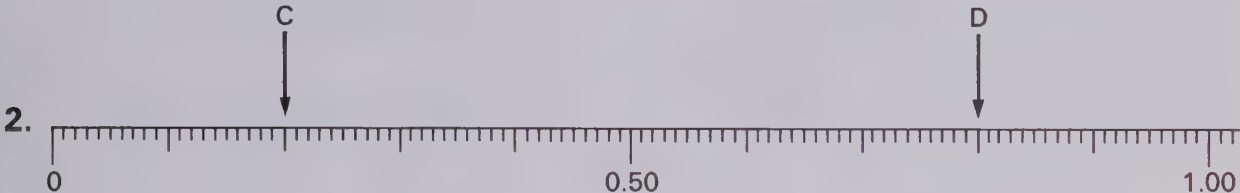
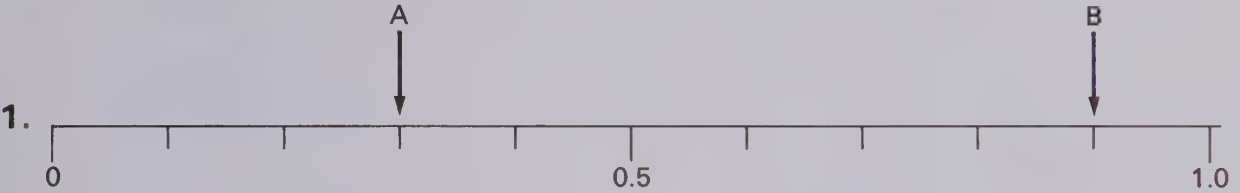
Have an even
closer look.

The pushpin is at 1.12 on
this scale showing hundredths.



Exercises

Write a decimal for each point marked with an arrow.



Decimals and Money

Malina, Kevin, and Dion each have \$1.37.

Malina has 1 dollar 3 dimes 7 pennies.



The dollar sign and the decimal help show the value of money.

\$1.37

Kevin has 1 dollar 2 dimes 17 pennies.



17 pennies have the same value as 1 dime 7 pennies.

\$1.37

Dion has 13 dimes 7 pennies.



13 dimes have the same value as 1 dollar 3 dimes.

\$1.37

Working Together

Use a dollar sign and a decimal to show the value of the money.

1.



Are the two amounts the same?

2. 1 dollar 5 dimes 16 pennies and 16 dimes 5 pennies
3. 2 dollars 11 dimes 12 pennies and 3 dollars 2 dimes 2 pennies

What is the value of

4. 1 dollar 19 dimes 8 pennies?
5. 1 dollar 13 dimes 15 pennies?

Exercises

Match.

1. 1 dollar 4 dimes 6 pennies
2. 1 dollar 4 dimes 14 pennies
3. 14 dimes 15 pennies
4. 16 dimes 4 pennies

- | | |
|---|-----------------------------|
| A | 1 dollar 4 dimes 15 pennies |
| B | 14 dimes 6 pennies |
| C | 15 dimes 14 pennies |
| D | 1 dollar 5 dimes 4 pennies |

Copy and complete the charts.

	Dollars	Dimes	Pennies	Value
5.	2	6	0	\$2.60
6.	0	4	0	?
7.	4	0	0	?
8.	0	1	9	?
9.	0	0	5	?
10.	3	0	2	?

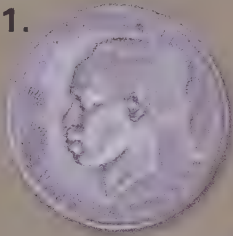
	Dollars	Dimes	Pennies	Value
11.	1	0	13	?
12.	0	11	3	?
13.	3	18	1	?
14.	1	17	12	?
15.	0	10	4	?
16.	2	9	10	?

Solve.

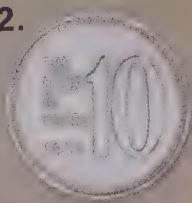
17. Penny has a dollar, 3 dimes, and 19 pennies. What is the value of her money?
- *19. How many dollar bills, dimes, and pennies do Malina, Kevin, and Dion have? What is the value of their money?
18. Lyle has a dollar and 4 dimes in one pocket. He has 3 dimes and 13 pennies in another. How much does he have in all?
- *20. Michele has 2 dollars, 5 dimes, and 12 pennies. Jeffrey has 1 dollar, 16 dimes, and 14 pennies. How much do they have together?

Can you name a country for each coin?

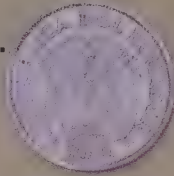
1.



2.



3.



4.



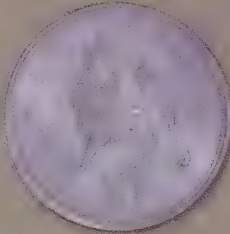
5.



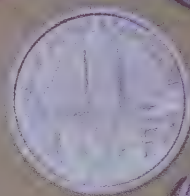
6.



*7.



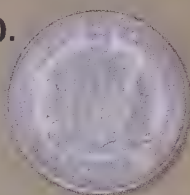
*8.



*9.



10.



*11.



*12.

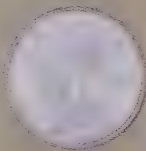


Many countries use decimals to show amounts of money.

1 dollar



1 tenth
of a dollar



1 hundredth
of a dollar



Complete
these statements.

\$1.11

stands for
1 dollar and
11 cents
in ? .

11 hundredths
of a dollar

1 ruble



1 tenth
of a ruble



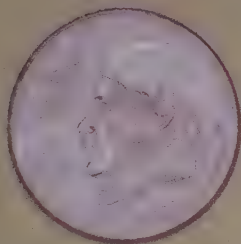
1 hundredth
of a ruble



Руб1.11

stands for
1 ruble and
11 kopecks
in Russia.

1 peso



1 tenth
of a peso



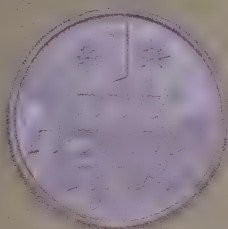
1 hundredth
of a peso



\$1.11

stands for
peso and
centavos
in Mexico.

1 pound



1 tenth
of a pound



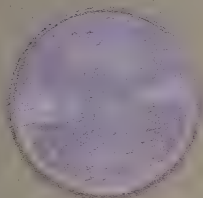
1 hundredth
of a pound



£1.11

stands for
pound and
agora
in Israel.

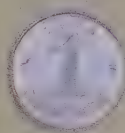
1 franc



1 tenth
of a franc



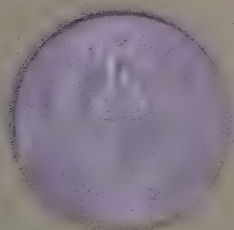
1 hundredth
of a franc



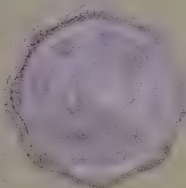
1.11F

stands for
1 ? and
11 ?
in France.

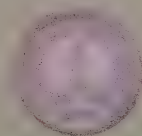
1 rupee



1 tenth
of a rupee



1 hundredth
of a rupee



Rs1.11

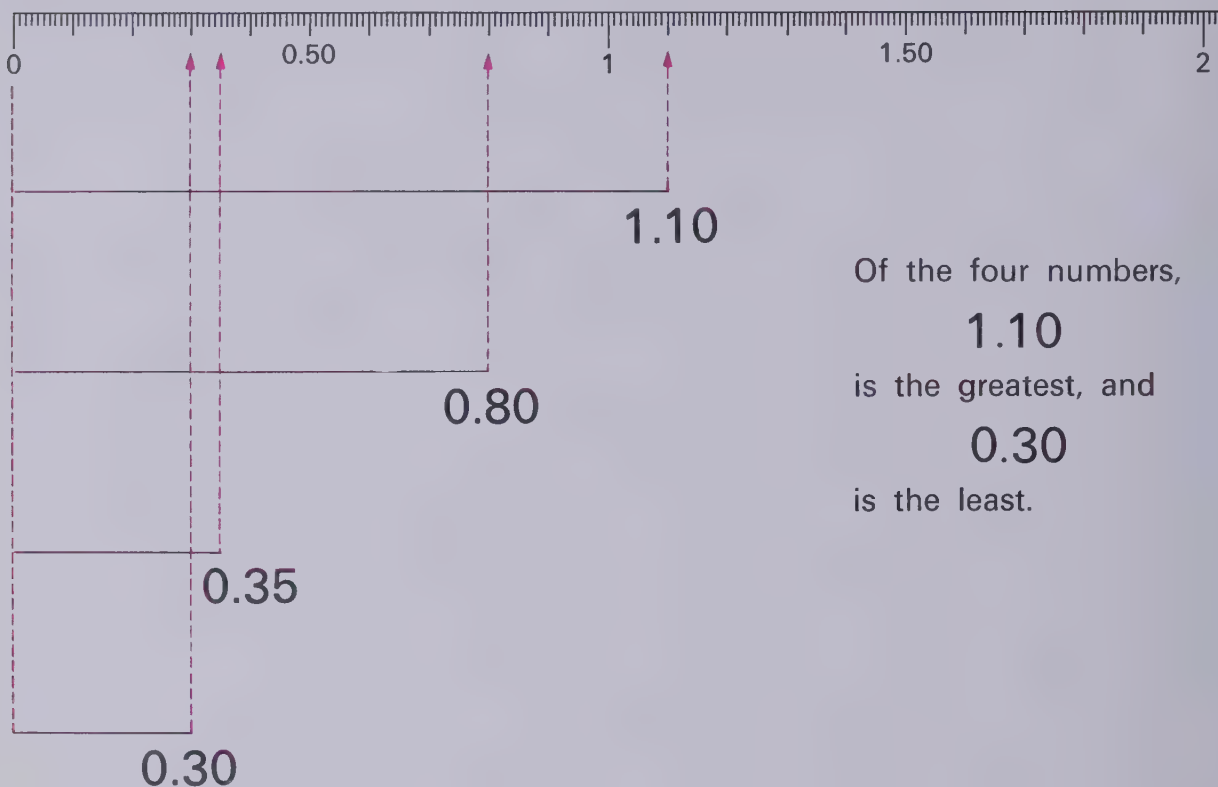
stands for
rupee and
paise
in ? .

**try
this**

Comparing and Ordering Decimals

Which of these numbers
is the greatest?
Which is the least?

0.80
0.30
1.10
0.35



Of the four numbers,
1.10
is the greatest, and
0.30
is the least.

Here is another way to compare decimals.

Look at the
whole numbers.

0.80
0.30
1.10
0.35

1 is greater than 0.
1.10 is the greatest
of the four numbers.

Look at
the first
decimal place.

0.80
0.30
0.35

8 is greater than 3.
0.80 is the next
greatest of the
four numbers.

Look at
the second
decimal place.

0.30
0.35

5 is greater than 0.
0.35 is the next
greatest and 0.30
is the least.

Working Together

Show each group of numbers on a number line.
Then list each group from least to greatest.

1. 2.8, 0.8, 2.0

2. 0.35, 1.30, 0.20, 1.35

Compare the whole numbers and the digits in the decimal places. Then list each group in order

3. from least to greatest.

2.4	1.9
12.0	2.5

4. from greatest to least.

0.15	10.45
1.74	1.04

Which is greater,

Which is less,

5. 1.4 or 1.7? 6. 2.40 or 2.04?

7. 4.1 or 3.7? 8. 1.95 or 1.59?

List from least to greatest.

List from greatest to least.

9. 1.68, 0.86, 1.86, 0.68

10. 2.16, 1.63, 2.36, 2.32

Exercises

Which is greater,

1. 2.88 or 2.92?

2. 8.9 or 9.8?

3. \$4.30 or \$4.03?

Which is less,

4. 3.9 or 3.1?

5. 1.95 or 2.95?

6. \$7.81 or \$7.78?

List from least to greatest.

7.

1.41	1.32	1.35
0.49	0.38	

8.

5.3	3.0	3.3
3.5	0.3	

List from greatest to least.



9.

1.52	2.15	3.21
3.25	10.12	

10.

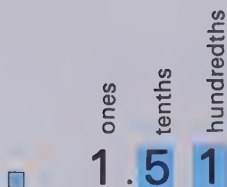
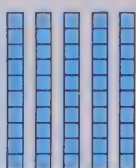
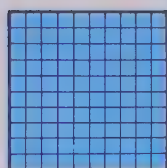
\$3.06	\$3.12	\$3.03
\$3.09	\$3.15	

11. Use tracing paper. Show Barky the path home, always moving to a space with a smaller number. No diagonal moves, please!

		9.82	7.89	5.92	2.29
8.05	8.29	9.28	3.98	1.93	2.23
7.50	4.20	3.28	4.02	3.19	2.92
6.80	4.08	2.82	4.20	0.24	1.94
5.43	5.07	2.42	4.22	0.42	0.94
4.32	4.99	4.84	4.48		

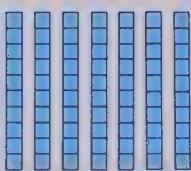
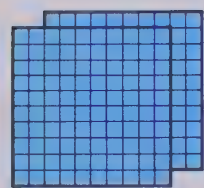
Adding Decimals

Add 1.51 and 2.73.

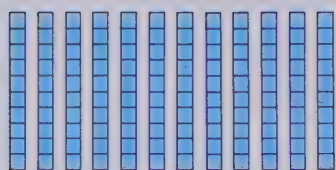


ones
tenths
hundredths
1.51

Show 1.51 and 2.73 with their places lined up in vertical form.

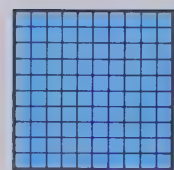


2.73



2.73

Add the hundredths and add the tenths.



1
1.51
2.73
2.4

Regroup 12 tenths as 1 one and 2 tenths. Show the 1 one lined up with the other ones.



1
1.51
2.73
4.24

Add the ones and place the decimal point.

The sum of 1.51 and 2.73 is 4.24.

Working Together

Line up the ones, tenths, and hundredths in vertical form.

1. $2.63 + 0.28$

2. $3.5 + 2.7$

3. $38.2 + 6.7$

4. $0.40 + 40.04$

Add by following the steps.

5.

$$\begin{array}{r} 5.7 \\ 2.6 \\ \hline \end{array}$$

Add tenths and regroup. _____

Add ones. _____

6.

$$\begin{array}{r} 3.28 \\ 1.04 \\ \hline \end{array}$$

Add hundredths and regroup. _____

Add tenths. _____

Add ones. _____

7.

$$\begin{array}{r} 2.65 \\ 1.79 \\ \hline \end{array}$$

Add hundredths and regroup. _____

Add tenths and regroup. _____

Add ones. _____

8.

$$\begin{array}{r} 16.73 \\ 34.28 \\ \hline \end{array}$$

Add and regroup. _____

Add and regroup. _____

Add and regroup. _____

Add. _____

Add.

9. $\begin{array}{r} 2.8 \\ 3.8 \\ \hline \end{array}$

10. $\begin{array}{r} 4.36 \\ 2.35 \\ \hline \end{array}$

11. $\begin{array}{r} 3.57 \\ 4.79 \\ \hline \end{array}$

12. $\begin{array}{r} 5.93 \\ 4.65 \\ \hline \end{array}$

13. $\begin{array}{r} 49.45 \\ 32.73 \\ \hline \end{array}$

14. $\begin{array}{r} \$2.39 \\ 6.69 \\ \hline \end{array}$

Exercises

Add.

1. $3.7 + 2.6$

2. $1.47 + 4.45$

3. $12.16 + 4.89$

4. $\$6.81 + \0.26

5. $69.38 + 21.38$

6. $9.85 + 0.91$

7. $9.6 + 4.8$

8. $\$45.46 + \6.64

9. $\begin{array}{r} 6.9 \\ 1.3 \\ \hline \end{array}$

10. $\begin{array}{r} 3.33 \\ 0.79 \\ \hline \end{array}$

11. $\begin{array}{r} 78.82 \\ 11.62 \\ \hline \end{array}$

12. $\begin{array}{r} 5.27 \\ 0.77 \\ \hline \end{array}$

13. $\begin{array}{r} 76.15 \\ 7.55 \\ \hline \end{array}$

14. $\begin{array}{r} \$4.33 \\ 5.84 \\ \hline \end{array}$

15. $\begin{array}{r} 4.44 \\ 7.18 \\ \hline \end{array}$

16. $\begin{array}{r} 2.89 \\ 0.75 \\ \hline \end{array}$

17. $\begin{array}{r} 8.1 \\ 3.7 \\ \hline \end{array}$

18. $\begin{array}{r} 19.78 \\ 20.30 \\ \hline \end{array}$

19. $\begin{array}{r} 1.94 \\ 1.79 \\ \hline \end{array}$

20. $\begin{array}{r} \$0.52 \\ 0.86 \\ \hline \end{array}$

21. $\begin{array}{r} 3.08 \\ 6.34 \\ \hline \end{array}$

22. $\begin{array}{r} 6.27 \\ 6.38 \\ \hline \end{array}$

23. $\begin{array}{r} 65.55 \\ 2.47 \\ \hline \end{array}$

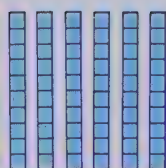
24. $\begin{array}{r} 9.7 \\ 8.4 \\ \hline \end{array}$

25. $\begin{array}{r} 0.62 \\ 9.39 \\ \hline \end{array}$

26. $\begin{array}{r} \$1.28 \\ 9.85 \\ \hline \end{array}$

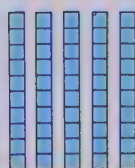
Subtracting Decimals

Subtract 2.37 from 3.62.



ones	tenths	hundredths
3	6	2
2	3	7
<hr/>		

Show 3.62 and 2.37 with their places lined up. Show the greater number first.



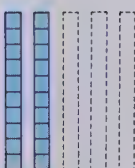
	5	12
3	6	2
2	3	7
<hr/>		

Cannot subtract 7 hundredths from 2 hundredths. Regroup 6 tenths, 2 hundredths as 5 tenths, 12 hundredths.



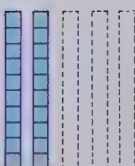
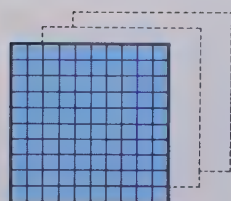
	5	12
3	6	2
2	3	7
<hr/>		
		5

Subtract hundredths.



	5	12
3	6	2
2	3	7
<hr/>		
	2	5

Subtract tenths.



	5	12
3	6	2
2	3	7
<hr/>		
1	2	5

Subtract ones and place the decimal point.

2.37 subtracted from 3.62 is 1.25.

Working Together

Complete each subtraction.

$$\begin{array}{r} 7 \ 13 \\ 1. \ ~~8.3~~ \\ \underline{4.6} \end{array}$$

$$\begin{array}{r} 8 \ 10 \\ 2. \ ~~3.90~~ \\ \underline{1.35} \end{array}$$

$$\begin{array}{r} 3 \ 13 \\ 3. \ ~~4.36~~ \\ \underline{3.75} \end{array}$$

$$\begin{array}{r} 1 \ 12 \\ 4. \ ~~4.22~~ \\ \underline{0.53} \end{array}$$

$$\begin{array}{r} 0 \ 14 \\ 5. \ ~~10.14~~ \\ \underline{7.47} \end{array}$$

$$\begin{array}{r} 6 \ 9 \ 14 \\ 6. \ ~~\$7.04~~ \\ \underline{3.49} \end{array}$$

Complete the subtraction using whole numbers.
Then complete the subtractions using decimals.

$$\begin{array}{r} 7. \ 65 \\ \underline{28} \end{array}$$

$$\begin{array}{r} 8. \ 6.5 \\ \underline{2.8} \end{array}$$

$$\begin{array}{r} 9. \ 0.65 \\ \underline{0.28} \end{array}$$

$$\begin{array}{r} 10. \ \$6.50 \\ \underline{2.80} \end{array}$$

$$\begin{array}{r} 11. \ 532 \\ \underline{374} \end{array}$$

$$\begin{array}{r} 12. \ 5.32 \\ \underline{3.74} \end{array}$$

$$\begin{array}{r} 13. \ 53.2 \\ \underline{37.4} \end{array}$$

$$\begin{array}{r} 14. \ 53.20 \\ \underline{37.40} \end{array}$$

$$\begin{array}{r} 15. \ \$5.32 \\ \underline{3.74} \end{array}$$

Subtract. Add to check.

$$\begin{array}{r} 16. \ 9.7 \\ \underline{2.8} \end{array}$$

$$\begin{array}{r} 17. \ 8.61 \\ \underline{1.56} \end{array}$$

$$\begin{array}{r} 18. \ 25.32 \\ \underline{4.85} \end{array}$$

$$\begin{array}{r} 19. \ 43.14 \\ \underline{29.26} \end{array}$$

$$\begin{array}{r} 20. \ 2.00 \\ \underline{1.86} \end{array}$$

$$\begin{array}{r} 21. \ \$9.03 \\ \underline{4.24} \end{array}$$

Exercises

Subtract.

$$1. \ 6.5 - 3.9$$

$$2. \ 3.49 - 2.53$$

$$3. \ 51.69 - 3.85$$

$$4. \ \$6.81 - \$4.24$$

$$5. \ 7.45 - 2.86$$

$$6. \ 28.1 - 9.7$$

$$7. \ 5.00 - 2.68$$

$$8. \ \$6.50 - \$1.81$$

$$\begin{array}{r} 9. \ 8.36 \\ \underline{7.91} \end{array}$$

$$\begin{array}{r} 10. \ 8.6 \\ \underline{3.7} \end{array}$$

$$\begin{array}{r} 11. \ 11.81 \\ \underline{2.13} \end{array}$$

$$\begin{array}{r} 12. \ 79.65 \\ \underline{55.94} \end{array}$$

$$\begin{array}{r} 13. \ 5.20 \\ \underline{1.75} \end{array}$$

$$\begin{array}{r} 14. \ \$3.16 \\ \underline{1.80} \end{array}$$

$$\begin{array}{r} 15. \ 20.20 \\ \underline{9.99} \end{array}$$

$$\begin{array}{r} 16. \ 8.00 \\ \underline{6.13} \end{array}$$

$$\begin{array}{r} 17. \ 25.8 \\ \underline{12.7} \end{array}$$

$$\begin{array}{r} 18. \ 8.60 \\ \underline{6.06} \end{array}$$

$$\begin{array}{r} 19. \ 70.03 \\ \underline{60.75} \end{array}$$

$$\begin{array}{r} 20. \ \$8.95 \\ \underline{3.97} \end{array}$$

Subtract. Add to check.

$$\begin{array}{r} 21. \ 7.58 \\ \underline{2.41} \end{array}$$

$$\begin{array}{r} 22. \ 5.3 \\ \underline{2.8} \end{array}$$

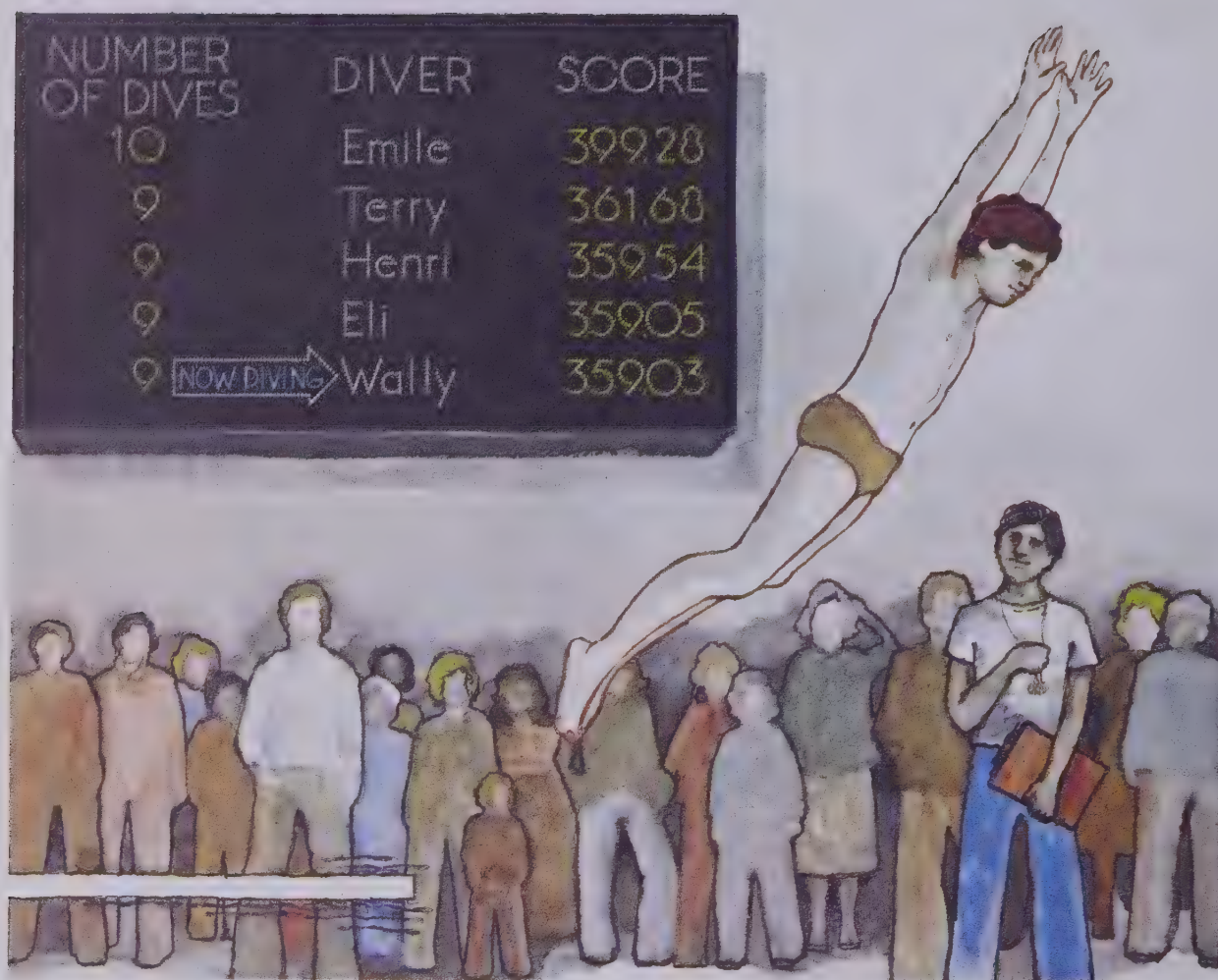
$$\begin{array}{r} 23. \ 70.00 \\ \underline{45.84} \end{array}$$

$$\begin{array}{r} 24. \ 4.02 \\ \underline{3.65} \end{array}$$

$$\begin{array}{r} 25. \ 32.94 \\ \underline{16.47} \end{array}$$

$$\begin{array}{r} 26. \ \$7.30 \\ \underline{2.87} \end{array}$$

Practice



Wally had trouble on his tenth and final dive.


1. Wally scored 29.52 on this dive. What was Wally's total score after 10 dives?
2. Eli scored 42.06 on his tenth dive. What was Eli's total score after 10 dives?
3. Henri scored 41.52 on his tenth dive. What was Henri's total score after 10 dives?
4. Terry scored 39.27 on his tenth dive. What was Terry's total score after 10 dives?
5. Emile had scored 41.30 on his tenth dive. What was Emile's score after 9 dives?
- *6. Draw a picture of the scoreboard after 10 dives. Show the divers listed in order from high scorer to low scorer.
- *7. Who had the better final score, Emile or Henri? How much better?
- *8. By how many points did Eli finish ahead of each of the other divers?


This chart shows ticket prices for the diving meet.

Age \ Section	Adult	Student	Child
Gold	\$2.25	\$1.50	\$0.75
Blue	\$1.75	\$1.25	\$0.50
Red	\$1.25	\$0.90	\$0.25

9. Eli's parents sat in Blue seats. How much did their two tickets cost?
10. Henri's brother bought an adult Gold and his sister bought a student Gold. How much did their tickets cost?
11. What was the total cost for three Blue tickets, one in each age group?
12. What was the total cost for three adult's seats, one in each section?
13. How much more did an adult Red cost than a student Red?
- *14. How much more did it cost to sit in a Blue seat than in a Red seat?
- *15. Suzie had \$1.25. In which section did she sit?

Multiply to complete each pattern.

1. $3 \times 2 =$ 

2. $2 \times 4 =$ 


$$3 \times 20 =$$

$2 \times 40 =$

$3 \times 200 =$

$2 \times 400 =$

3. $5 \times 3 =$

4. $3 \times 7 =$ 

$5 \times 30 =$ 

$3 \times 70 =$

$$5 \times 300 =$$

$3 \times 700 =$

5.

1	10	100
<u>7</u>	<u>7</u>	<u>7</u>

$$\begin{array}{r} 100 \\ 7 \\ \hline \end{array}$$

6.

6	60	600
<u>8</u>	<u>8</u>	<u>8</u>

$$\begin{array}{r} 600 \\ 8 \\ \hline \end{array}$$

Multiply.

7. $\begin{matrix} 4 \\ 4 \end{matrix}$

8. $\frac{30}{2}$

9. 200
6

10. $\begin{matrix} 5 \\ 8 \end{matrix}$

11. 90
6

12. $\begin{array}{r} 900 \\ 8 \end{array}$

13. $\frac{500}{3}$

14. $\frac{800}{4}$

15. $\frac{70}{9}$

16. $\frac{400}{9}$

17. $\begin{matrix} 6 \\ 1 \end{matrix}$

18. $\frac{700}{2}$

19. $\begin{array}{r} 50 \\ 6 \end{array}$

20. $\frac{600}{5}$

21. $\frac{10}{4}$

22. $\frac{40}{7}$

23. $\begin{matrix} 8 \\ 2 \end{matrix}$

24. $\frac{100}{6}$

25. $\begin{matrix} 7 \\ 6 \end{matrix}$

26. $\frac{80}{8}$

27. $\frac{60}{4}$

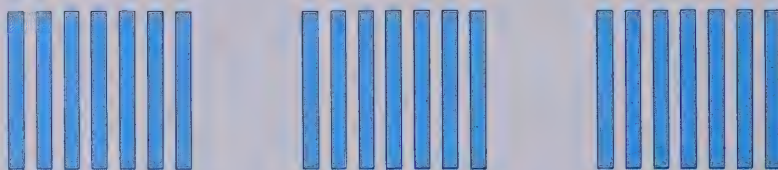
28. $\frac{300}{8}$

KEEPING SHARP

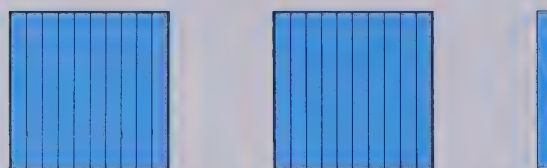
Multiplying Decimal Tenths and Whole Numbers

Multiply 3 and 0.7.

For 3×0.7 , think of 3 groups of 7 tenths.

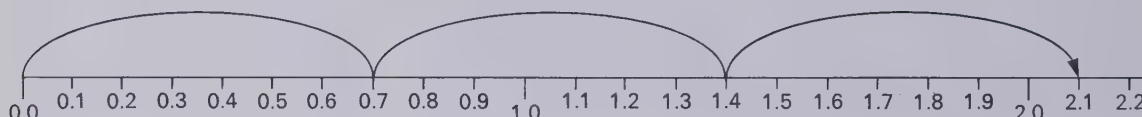


3 groups of 7 tenths equal 21 tenths, or 2 ones and 1 tenth.



$$3 \times 0.7 = 2.1$$

On a number line, 3×0.7 looks like this:



$$3 \times 0.7 = 2.1$$

Working Together

Complete each multiplication.

1. $3 \times 2 = \boxed{}$

3×2 tenths = $\boxed{}$ tenths

$3 \times 0.2 = \boxed{}$

2. $4 \times 6 = \boxed{}$

4×6 tenths = $\boxed{}$ tenths or $\boxed{}$ ones $\boxed{}$ tenths

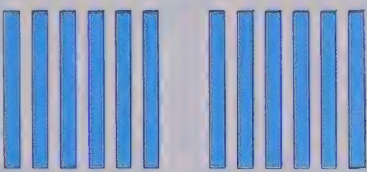
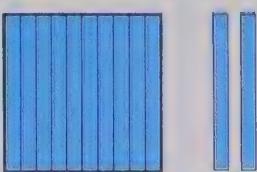

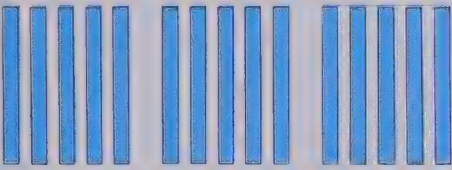
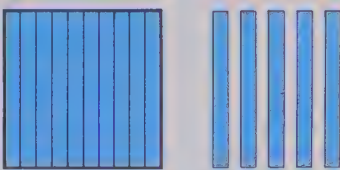

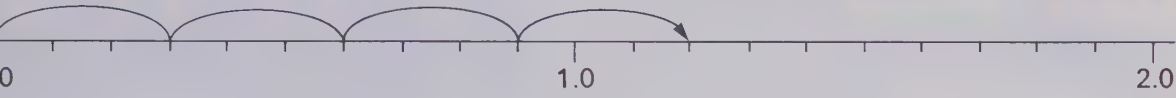

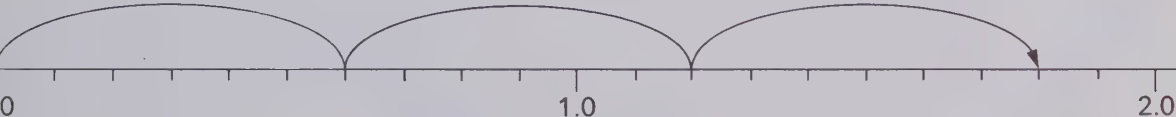

$4 \times 0.6 = \boxed{}$

3. $\begin{array}{r} 4 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 4 \text{ tenths} \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 0.4 \\ 2 \\ \hline \end{array}$

4. $\begin{array}{r} 7 \\ 3 \\ \hline \end{array}$ $\begin{array}{r} 7 \text{ tenths} \\ 3 \\ \hline \end{array}$ $\begin{array}{r} 0.7 \\ 3 \\ \hline \end{array}$



Exercises



Complete the multiplication sentence for each picture.



1.  \longrightarrow 
 $2 \times 0.6 =$ 
2.  \longrightarrow 
 $3 \times 0.5 =$ 
3. 
 $4 \times 0.3 =$ 
4. 
 $3 \times 0.6 =$ 



Complete each pair of multiplications.



5.



3	0.3
<u>2</u>	<u>2</u>
	
6.

4	0.4
<u>4</u>	<u>4</u>
	
7.

4	0.4
<u>5</u>	<u>5</u>
	
8.

5	0.5
<u>5</u>	<u>5</u>
	
9.

7	0.7
<u>6</u>	<u>6</u>
	
10.

3	0.3
<u>8</u>	<u>8</u>
	

Multiply.

11. 3×0.3
12. 2×0.7
13. 6×0.9
14. 7×0.6
15. 4×0.2
16. 4×0.5
17. 5×0.6
18. 8×0.9
19. $\begin{array}{r} 0.8 \\ \times 3 \\ \hline \end{array}$
20. $\begin{array}{r} 0.5 \\ \times 6 \\ \hline \end{array}$
21. $\begin{array}{r} 0.2 \\ \times 6 \\ \hline \end{array}$
22. $\begin{array}{r} 0.3 \\ \times 5 \\ \hline \end{array}$
23. $\begin{array}{r} 0.7 \\ \times 7 \\ \hline \end{array}$
24. $\begin{array}{r} 0.4 \\ \times 7 \\ \hline \end{array}$
25. $\begin{array}{r} 0.7 \\ \times 5 \\ \hline \end{array}$
26. $\begin{array}{r} 0.8 \\ \times 7 \\ \hline \end{array}$
27. $\begin{array}{r} 0.2 \\ \times 9 \\ \hline \end{array}$
28. $\begin{array}{r} 0.8 \\ \times 6 \\ \hline \end{array}$
29. $\begin{array}{r} 0.7 \\ \times 9 \\ \hline \end{array}$
30. $\begin{array}{r} 0.9 \\ \times 5 \\ \hline \end{array}$

Multiplying One-Place Decimals

Mike walks 1.7 km between school and home each day. How far does he walk between school and home in 5 school days?

Multiply 5 and 1.7.

Here is a long form for multiplying.

$$\begin{array}{r} 1.7 \\ 5 \\ \hline 3.5 \end{array}$$

5×7 tenths = 35 tenths
or 3 ones and 5 tenths.

Here is a short form or standard form for multiplying.

$$\begin{array}{r} 3 \\ 1.7 \\ 5 \\ \hline .5 \end{array}$$

$$\begin{array}{r} 1.7 \\ 5 \\ \hline 3.5 \\ 5.0 \end{array}$$

$5 \times 1 = 5$

and 3 more
are 8.

$$\begin{array}{r} 3 \\ 1.7 \\ 5 \\ \hline 8.5 \end{array}$$

Done!

$$\begin{array}{r} 1.7 \\ 5 \\ \hline 3.5 \\ 5.0 \\ \hline 8.5 \end{array}$$

Add.

Mike walks 8.5 km between school and home in 5 school days.

If Mike walks 8.5 km between school and home in a week, how far would he walk in 4 weeks?

Use the short form to multiply 4 and 8.5.

For $\begin{array}{r} 8.5 \\ 4 \\ \hline \end{array}$

multiply
tenths first,

$$\begin{array}{r} 2 \\ 8.5 \\ 4 \\ \hline .0 \end{array}$$

and then
multiply
ones.

$$\begin{array}{r} 2 \\ 8.5 \\ 4 \\ \hline 34.0 \end{array}$$

Mike would walk 34 km in 4 weeks.



Working Together

Complete each multiplication.

$$\begin{array}{r} 1. \quad 14 \\ \quad 3 \\ \hline \end{array} \quad \begin{array}{r} 14 \text{ tenths} \\ \quad 3 \\ \hline \end{array} \quad \begin{array}{r} 1.4 \\ \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 58 \\ \quad 6 \\ \hline \end{array} \quad \begin{array}{r} 58 \text{ tenths} \\ \quad 6 \\ \hline \end{array} \quad \begin{array}{r} 5.8 \\ \quad 6 \\ \hline \end{array}$$

Multiply.

$$\begin{array}{r} 3. \quad 4.3 \\ \quad 2 \\ \hline \end{array} \quad \begin{array}{r} 4. \quad 3.6 \\ \quad 7 \\ \hline \end{array} \quad \begin{array}{r} 5. \quad 7.5 \\ \quad 8 \\ \hline \end{array}$$

Exercises

Complete each pair of multiplications.

$$1. \quad \begin{array}{r} 23 \\ \quad 4 \\ \hline \end{array} \quad \begin{array}{r} 2.3 \\ \quad 4 \\ \hline \end{array}$$

$$2. \quad \begin{array}{r} 58 \\ \quad 9 \\ \hline \end{array} \quad \begin{array}{r} 5.8 \\ \quad 9 \\ \hline \end{array}$$

$$3. \quad \begin{array}{r} 64 \\ \quad 5 \\ \hline \end{array} \quad \begin{array}{r} 6.4 \\ \quad 5 \\ \hline \end{array}$$

Multiply.

$$4. \quad 3 \times 2.6$$

$$5. \quad 5 \times 5.8$$

$$6. \quad 6 \times 4.2$$

$$7. \quad 8 \times 6.9$$

$$8. \quad \begin{array}{r} 7.5 \\ \quad 2 \\ \hline \end{array}$$

$$9. \quad \begin{array}{r} 3.7 \\ \quad 9 \\ \hline \end{array}$$

$$10. \quad \begin{array}{r} 8.3 \\ \quad 8 \\ \hline \end{array}$$

$$11. \quad \begin{array}{r} 9.5 \\ \quad 3 \\ \hline \end{array}$$

$$12. \quad \begin{array}{r} 4.6 \\ \quad 9 \\ \hline \end{array}$$

$$13. \quad \begin{array}{r} 2.1 \\ \quad 8 \\ \hline \end{array}$$

$$14. \quad \begin{array}{r} 9.6 \\ \quad 6 \\ \hline \end{array}$$

$$15. \quad \begin{array}{r} 5.4 \\ \quad 7 \\ \hline \end{array}$$

$$16. \quad \begin{array}{r} 6.9 \\ \quad 4 \\ \hline \end{array}$$

$$17. \quad \begin{array}{r} 2.8 \\ \quad 2 \\ \hline \end{array}$$

$$18. \quad \begin{array}{r} 3.7 \\ \quad 6 \\ \hline \end{array}$$

$$19. \quad \begin{array}{r} 7.9 \\ \quad 7 \\ \hline \end{array}$$

What would the calculator show for each?

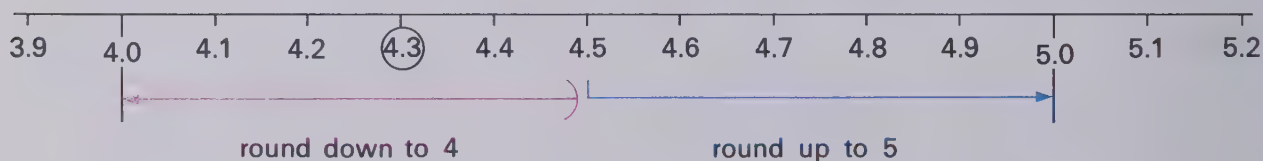
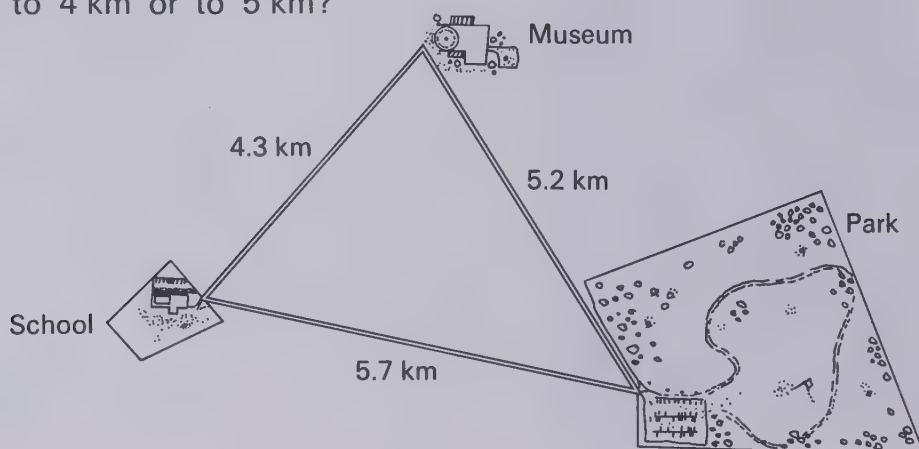
$$20. \quad \begin{array}{r} 7.3 \\ \times 5 \\ \hline \end{array}$$

$$21. \quad \begin{array}{r} 4.7 \\ + 5.6 \\ \hline \end{array}$$

$$22. \quad \begin{array}{r} 8.2 \\ - 7.5 \\ \hline \end{array}$$

Rounding Decimal Tenths to Whole Numbers

The distance from the school to the museum is between 4 km and 5 km. Is it closer to 4 km or to 5 km?

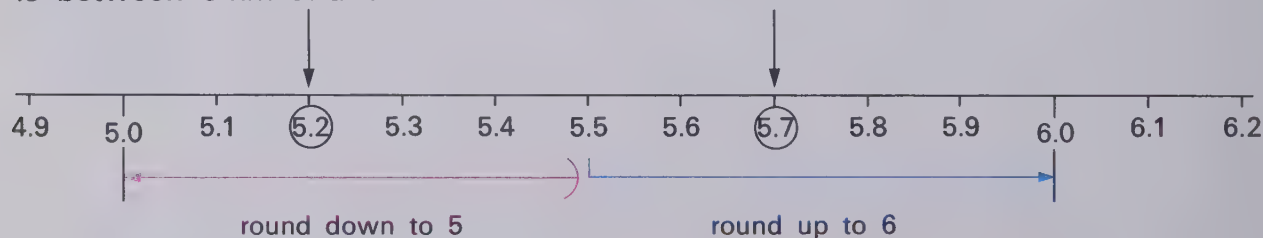


4.3 rounded to the nearest whole number is 4.

The distance from the school to the museum is 4 km to the nearest whole number of kilometres.

The distance from the museum to the park is between 5 km and 6 km.

The distance from the park to the school is between 5 km and 6 km.



5.2 rounded to the nearest whole number is 5.

5.7 rounded to the nearest whole number is 6.

The distance from the museum to the park is 5 km to the nearest whole number of kilometres.

The distance from the park to the school is 6 km to the nearest whole number of kilometres.

Working Together

Use number lines to help you answer the questions.



1. 1.3 is between 1 and 2.
Is it closer to 1 or to 2?

2. 1.6 is between 1 and 2.
Is it closer to 1 or to 2?



3. 3.2 is between which two whole numbers?

Name the first whole number you find on each side of 3.2.

4. 1.5 is between which two whole numbers?

5. 9.6 is between which two whole numbers?

Round each of these to the nearest whole number.

6. 3.2 7. 1.5 8. 9.6

Exercises

Round each of these to the nearest whole number.

1. 2.7 2. 7.1 3. 0.8
4. 3.5 5. 9.7 6. 12.2

Round each of these to the nearest whole number of litres, kilometres, or kilograms.

7. 7.8 L 8. 5.3 km 9. 3.6 kg
10. 5.9 km 11. 2.5 kg 12. 8.4 L
13. 6.1 kg 14. 14.6 L 15. 9.5 km

Write each sentence showing each amount rounded.

16. She carried 8.9 kg on her back.
17. They drank 6.5 L of milk.
18. The children traveled 15.2 km.

Answer each question with a whole number.

1. How many pieces of string that are 1 m long can be cut from a piece of string that is 4.5 m long?
2. The cookies are sold two for 9¢. How much would one cookie cost?
3. 4.5 pies were left after the picnic. Each box held one pie. How many boxes were needed to carry the pies home?
4. The jug holds 4.5 L. Each can of juice holds 1 L. How many cans must be opened to fill the jug?
5. The pail holds 4.5 L. Each bottle holds 1 L. How many bottles can be filled from the pail?

**PROBLEM
SOLVING**

Rounding Addends to Estimate the Sum

Ernst carried 8.9 kg on his back. Shelly carried 7.4 kg and Kelly carried 9.8 kg. Estimate the total mass of the backpacks.

Round each mass to the nearest whole number of kilograms.

$$8.9 \longrightarrow 9$$

$$7.4 \longrightarrow 7$$

$$9.8 \longrightarrow 10$$

Find the sum. $\rightarrow 26$

The total mass of the backpacks is about 26 kg.



Working Together

Make a choice to estimate each sum. Then add to get the estimate.

$$\begin{array}{r} 1. \quad 2.9 \\ \quad 8.1 \\ \hline \end{array}$$

2	or	3	or	3
<u>8</u>		<u>8</u>		<u>9</u>

$$\begin{array}{r} 2. \quad 6.3 \\ \quad 3.1 \\ \hline \end{array}$$

6	or	6	or	7
<u>3</u>		<u>4</u>		<u>4</u>

$$\begin{array}{r} 3. \quad 17.3 \\ \quad 8.5 \\ \hline \end{array}$$

17	or	17	or	18
<u>8</u>		<u>9</u>		<u>9</u>

$$\begin{array}{r} 4. \quad 5.9 \\ \quad 8.7 \\ \hline \end{array}$$

5	or	5	or	6
<u>8</u>		<u>9</u>		<u>9</u>

Exercises

Round each addend to the nearest whole number. Then add to estimate each sum.

$$\begin{array}{r} 1. \quad 1.9 \\ \quad 4.3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 4.0 \\ \quad 2.4 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 3.2 \\ \quad 2.8 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 5.6 \\ \quad 1.9 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 7.3 \\ \quad 3.6 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 6.5 \\ \quad 8.4 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 3.9 \\ \quad 7.3 \\ \hline 10.5 \end{array}$$

$$\begin{array}{r} 8. \quad 10.4 \\ \quad 4.9 \\ \hline 9.9 \end{array}$$

$$\begin{array}{r} 9. \quad 1.2 \\ \quad 1.9 \\ \hline 2.2 \end{array}$$

Round each amount to the nearest whole number. Then add to estimate the total amount.

$$10. \quad 2.2 \text{ kg and } 3.1 \text{ kg}$$

$$11. \quad 5.7 \text{ L and } 1.4 \text{ L}$$

$$12. \quad 4.1 \text{ km and } 4.8 \text{ km}$$

$$13. \quad 3.9 \text{ L and } 5.9 \text{ L}$$

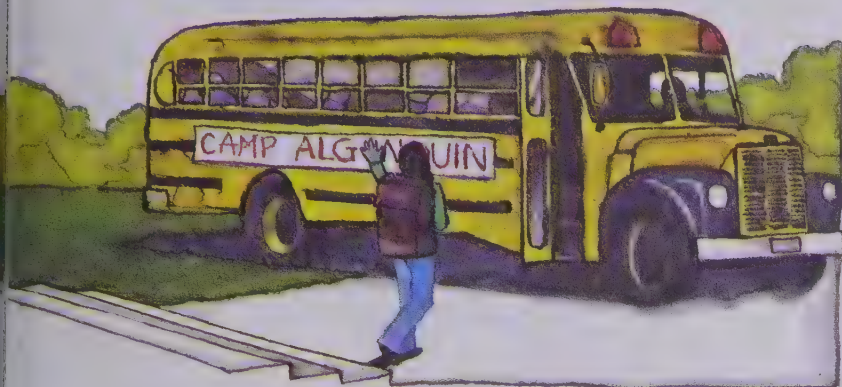
$$14. \quad 2.4 \text{ km and } 7.5 \text{ km}$$

$$15. \quad 8.6 \text{ kg and } 6.0 \text{ kg}$$

$$16. \quad 4.7 \text{ L, } 1.6 \text{ L, and } 3.3 \text{ L}$$

Rounding Factors to Estimate the Product

The bus uses 12.8 L of fuel for each trip to camp. Estimate the number of litres needed for 5 trips to camp.



Round to the nearest whole number of litres.

$$12.8 \longrightarrow 13$$

Find the product. $\longrightarrow 65$

The bus will need about 65 L of fuel.

Working Together

Make a choice to estimate each product. Then multiply to get the estimate.

$$\begin{array}{r} 1. \quad 3.9 \\ \quad \quad 4 \end{array}$$

3		4
<u>4</u>	or	<u>4</u>

$$\begin{array}{r} 2. \quad 12.4 \\ \quad \quad 3 \end{array}$$

12		13
<u>3</u>	or	<u>3</u>

Round to the nearest whole number and multiply.

$$\begin{array}{r} 3. \quad 7.4 \\ \quad \quad 3 \end{array}$$

$$\begin{array}{r} 4. \quad 3.9 \\ \quad \quad 2 \end{array}$$

$$\begin{array}{r} 5. \quad 11.8 \\ \quad \quad 4 \end{array}$$

Exercises

Round to the nearest whole number and multiply.

$$\begin{array}{r} 1. \quad 2.7 \\ \quad \quad 4 \end{array}$$

$$\begin{array}{r} 2. \quad 1.8 \\ \quad \quad 3 \end{array}$$

$$\begin{array}{r} 3. \quad 3.3 \\ \quad \quad 2 \end{array}$$

$$\begin{array}{r} 4. \quad 2.4 \\ \quad \quad 3 \end{array}$$

$$\begin{array}{r} 5. \quad 3.6 \\ \quad \quad 4 \end{array}$$

$$\begin{array}{r} 6. \quad 26.1 \\ \quad \quad 2 \end{array}$$

$$\begin{array}{r} 7. \quad 13.3 \\ \quad \quad 8 \end{array}$$

$$\begin{array}{r} 8. \quad 11.9 \\ \quad \quad 5 \end{array}$$

$$\begin{array}{r} 9. \quad 24.1 \\ \quad \quad 4 \end{array}$$

$$\begin{array}{r} 10. \quad 15.8 \\ \quad \quad 3 \end{array}$$

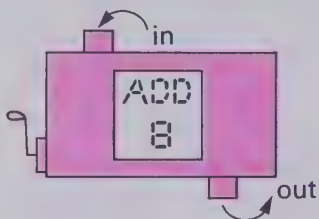
Estimate the total amount.

11. 4 backpacks,
6.9 kg in each

12. 4 trips, 14.2 L of
fuel for each trip

Guess and Test

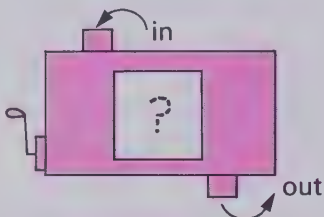
This machine adds 8 to each number that goes in.



in	3	5	8	0	7	6
out	11	13	16	8	15	14

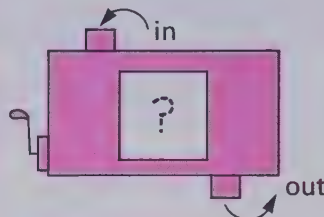
Guess what each machine does. Test your guess with all the numbers in the table.

1.



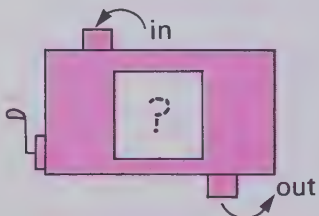
in	15	12	18	10	22	35
out	5	2	8	0	12	25

2.



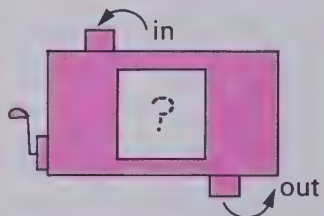
in	3	7	0	5	2	10
out	21	49	0	35	14	70

3.



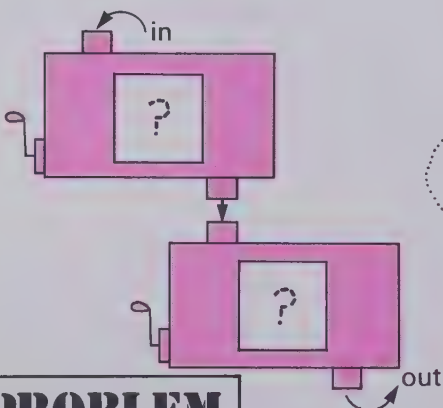
in	0.3	0.6	1.2	2.4	3.0	0.5
out	0.9	1.2	1.8	3.0	3.6	1.1

4.



in	15	18	12	6	60	21
out	5	6	4	2	20	7

5.



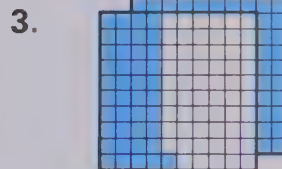
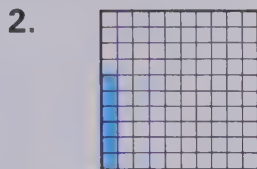
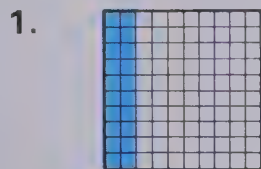
Two things happen to each number that goes in. Guess what. Then test.

in	5	2	3	6	1	4
out	12	3	6	15	0	9

PROBLEM SOLVING

Checking Up

Write a decimal to match each picture.



Write a decimal for each point marked with an arrow.



Write the words.

6. 0.6
7. 0.38
8. 2.03

Write each as a two-place decimal.

9. 0.2 10. 3.7

Write each as a one-place decimal.

11. 4.90 12. 0.10

Complete.

13. 0.67 shows tenths 7 hundredths, or hundredths.
14. 1 dollar 3 dimes 5 pennies are worth \$.
15. 2 dollars 13 dimes are worth \$.
16. 3 dimes 17 pennies have the same value as dimes 7 pennies.

Which is greater,

17. 2.7 or 2.3?
18. 0.36 or 0.63?

Which is less,

19. 4.2 or 2.2?
20. 1.65 or 1.68?

List these numbers in order from least to greatest.

21. 1.88, 1.55, 0.58, 0.81, 1.85, 0.55

Add.

22. $\begin{array}{r} 2.7 \\ 3.6 \\ \hline \end{array}$ 23. $\begin{array}{r} 1.58 \\ 0.74 \\ \hline \end{array}$ 24. $\begin{array}{r} 3.64 \\ 0.28 \\ 1.19 \\ \hline \end{array}$

Subtract.

25. $\begin{array}{r} 9.4 \\ 3.7 \\ \hline \end{array}$ 26. $\begin{array}{r} 2.30 \\ 1.68 \\ \hline \end{array}$ 27. $\begin{array}{r} 3.00 \\ 0.65 \\ \hline \end{array}$

Multiply.

28. $\begin{array}{r} 0.7 \\ 3 \\ \hline \end{array}$ 29. $\begin{array}{r} 1.2 \\ 4 \\ \hline \end{array}$ 30. $\begin{array}{r} 2.6 \\ 5 \\ \hline \end{array}$

Round each to the nearest whole number.

31. 1.2 32. 3.8 33. 2.5

9 MEASUREMENT

Measuring and Estimating in Centimetres



The ruler shows centimetres (cm).

The wall is about 1 cm thick.

To the nearest centimetre,
the bed is 9 cm wide.




The height of the chair
appears to be about 7 cm.

You can measure the chair to
find out if 7 cm is a good
estimate for its height.







Working Together

Complete the chart. Estimate first. Then use a centimetre ruler and measure the height of each to the nearest centimetre.

	Item	Estimate	Measurement
1.	rocking chair	7 cm	about  cm
2.	bedroom ceiling	 cm	about  cm

Exercises

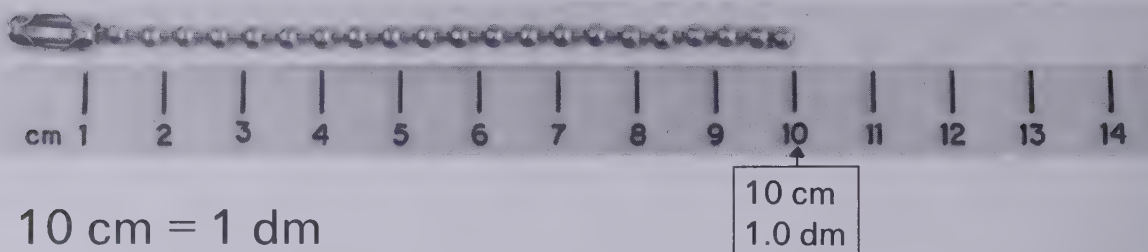
Make a chart. Choose 5 items from the picture. Make an estimate. Then measure each to the nearest centimetre.

	Item	Estimate	Measurement
1.	height of chair	 cm	about  cm
2.	diameter of table	 cm	about  cm



Decimetres, Centimetres, and Decimals

A decimetre (dm) equals 10 cm. The chain is 1 dm long.



$$10 \text{ cm} = 1 \text{ dm}$$

A centimetre is 1 of 10 equal parts of a decimetre.

A centimetre is one-tenth of a decimetre.

$$1 \text{ cm} = 0.1 \text{ dm}$$

The connector on the chain is 1 cm or 0.1 dm long.

Working Together

Give each length in decimetres.

Give each length in centimetres.

Example: 13 cm = 10 cm and 3 cm
13 cm = 1 dm and 0.3 dm
13 cm = 1.3 dm

Example: 1.2 dm = 1 dm and 0.2 dm
1.2 dm = 10 cm and 2 cm
1.2 dm = 12 cm

1. 15 cm 2. 20 cm 3. 5 cm 4. 1.4 dm 5. 3 dm 6. 0.8 dm

Estimate the lengths in centimetres. Then give your estimates in decimetres. Measure to check your estimates.

- 7.
- 8.
- 9.

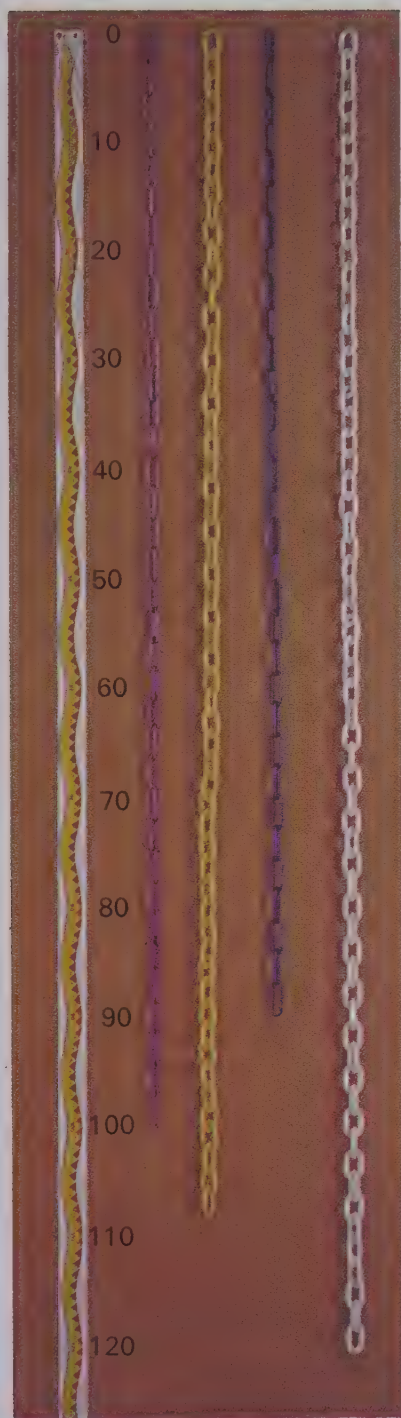
Exercises

Copy and complete this chart.

	Item	Estimate	Measurement
1.	your pencil	cm or dm	cm or dm
2.	the length of this book	cm or dm	cm or dm
3.	the width of your hand	cm or dm	cm or dm
4.	the length of a hair ribbon	cm or dm	cm or dm
5–10.	List 6 items of your own.	cm or dm	cm or dm

Metres, Centimetres, and Decimals

The purple chain
is 100 cm or
1 m (metre) long.
 $100\text{ cm} = 1\text{ m}$



A centimetre is 1 of 100 equal parts of a metre.
A centimetre is one-hundredth of a metre.

$$1\text{ cm} = 0.01\text{ m}$$

The white chain is 121 cm long.
The white chain is 1 m and 21 cm or 1.21 m long.
The blue chain is 90 cm or 0.90 m long.

Working Together

Give each length in metres.

1. 125 cm 2. 108 cm 3. 75 cm

Give each length in centimetres.

4. 1.18 m 5. 0.90 m 6. 1.03 m

How long is the yellow chain

7. in centimetres? 8. in metres?

Measure each in centimetres.

Then give each length in metres.

9. from the floor to your nose 10. a side of your desk

Exercises

Measure each in centimetres.

Then give each length in metres.

1. your foot 2. a bookcase
3. how wide you can smile
4. from the floor to your knee
5. from the floor to your waist
6. from the floor to your chin
7. a belt you wear 8. a skipping rope
9. a necktie 10. a shoelace
*11. a chain of 50 paper clips
*12. the string used to tie a box

Metres, Decimetres, Centimetres, and Decimals



The length of the runway is 1 m.

Each wingspan is 1 dm.

The length of each propeller blade is 1 cm.

$$10 \text{ cm} = 1 \text{ dm} \qquad 1 \text{ cm} = 0.1 \text{ dm}$$

$$10 \text{ dm} = 1 \text{ m} \qquad 1 \text{ dm} = 0.1 \text{ m}$$

$$100 \text{ cm} = 1 \text{ m} \qquad 1 \text{ cm} = 0.01 \text{ m}$$

The lights at the top of the runway are 104 cm from the lights at the bottom.

$$104 \text{ cm} = 100 \text{ cm and } 4 \text{ cm}$$

$$104 \text{ cm} = 10 \text{ dm and } 0.4 \text{ dm}$$

$$104 \text{ cm} = 10.4 \text{ dm}$$

$$104 \text{ cm} = 100 \text{ cm and } 4 \text{ cm}$$

$$104 \text{ cm} = 1 \text{ m and } 0.04 \text{ m}$$

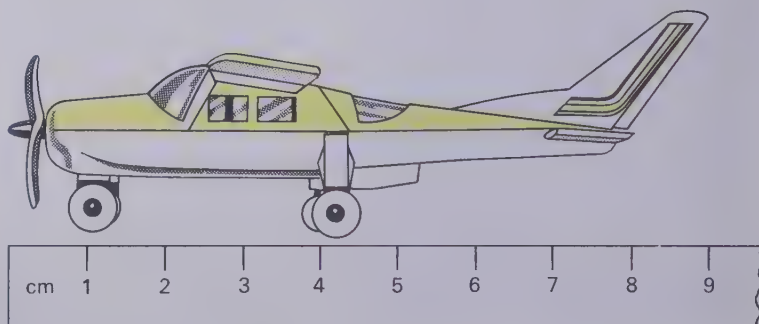
$$104 \text{ cm} = 1.04 \text{ m}$$

The lights at the top are 10.4 dm or 1.04 m from the lights at the bottom.

Each airplane is 9 cm from nose to tail.

$$9 \text{ cm} = 0.9 \text{ dm} \qquad 9 \text{ cm} = 0.09 \text{ m}$$

Each airplane is 0.9 dm or 0.09 m long.



Working Together

Copy and complete the chart.

1.	156 cm	15.6 dm	1.56 m
2.	123 cm	dm	m
3.	47 cm	dm	m
4.	cm	3 dm	m
5.	cm	0.7 dm	m
6.	cm	dm	0.23 m
7.	cm	dm	1.6 m

Measure. Give each measurement in centimetres, in decimetres, and in metres.

8. your height 9. a giant step

Exercises

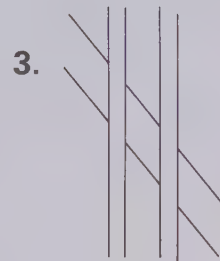
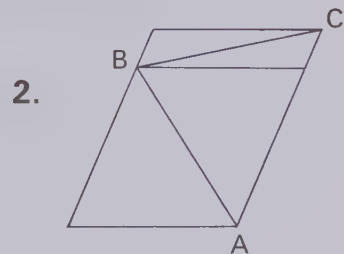
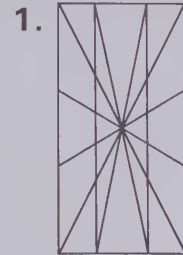
Copy and complete the chart.

1.	372 cm	dm	m
2.	cm	13.5 dm	m
3.	cm	dm	1.06 m
4.	209 cm	dm	m
5.	cm	dm	0.7 m
6.	cm	8.6 dm	m
7.	cm	dm	5 m
8.	8 cm	dm	m
9.	cm	4 dm	m

Measure. Give each measurement in centimetres, in decimetres, and in metres.

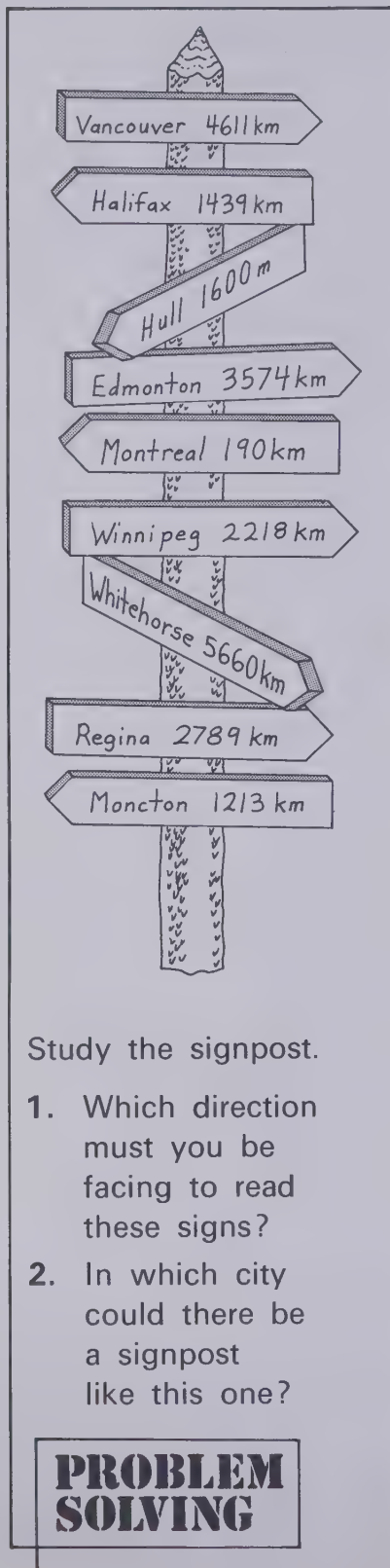
10. your arm span 11. a standing long jump
 12. from your nose to the fingertips of your outstretched hand
 13–17. how high you can reach lying down, sitting on the floor, kneeling, standing, jumping
 *18. how far you jump off the ground when you jump straight up

For each picture, give a true statement that *looks* as if it is not true.



**try
this**

Kilometres and Metres



Study the signpost.

1. Which direction must you be facing to read these signs?
2. In which city could there be a signpost like this one?

PROBLEM SOLVING

Run the length of a soccer field
10 times and you run about 1000 m.

$$1000 \text{ m} = 1 \text{ km}$$

1 kilometre

Run the length of a soccer field
10 times and you run about 1 km.

Working Together

Give each distance in kilometres.

1. 2000 m
2. 25 000 m

Give each distance in metres.

3. 5 km
4. 16 km

Make a list.

5. Name things that are about 1 km from your school.

Exercises

Give each distance in kilometres.

1. 3000 m
2. 16 000 m
3. 1000 m
4. 500 000 m
5. 42 000 m
6. 20 000 m

Give each distance in metres.

7. 1 km
8. 52 km
9. 100 km
10. 18 km
11. 120 km
12. 7 km

Is the distance greater than or less than
1 km from your school to the nearest

13. house?
14. grocery store?
15. gas station?
16. railway track?
17. fire station?
18. traffic light?
19. police station?
20. fire hydrant?
21. bus stop?
22. pay telephone?
23. post office?
24. farm?

Choosing a Unit of Length



The two goal nets are less than 1 km apart.

There are many centimetres from one net to the other.

Goal nets on a soccer field are about 100 m apart.

The kilometre is too great to use for measuring the distance between the goal nets.

The centimetre is too small.

The metre is best for measuring this distance.

Exercises

Make a chart as suggested. Use a check to show the unit you would use to measure each of these.

1. from one soccer goal net to the other
2. a ballpoint pen
3. an airplane trip
4. a canoe
5. a worm
6. an elephant
7. a mouse
8. a hiking trail
9. a dollar bill
10. the school gym
11. the Mackenzie River
12. an eraser
13. a flag pole
14. the distance across Canada
15. a nail

	cm	dm	m	km
1.			✓	
2.				
3.				

Finding the Perimeter

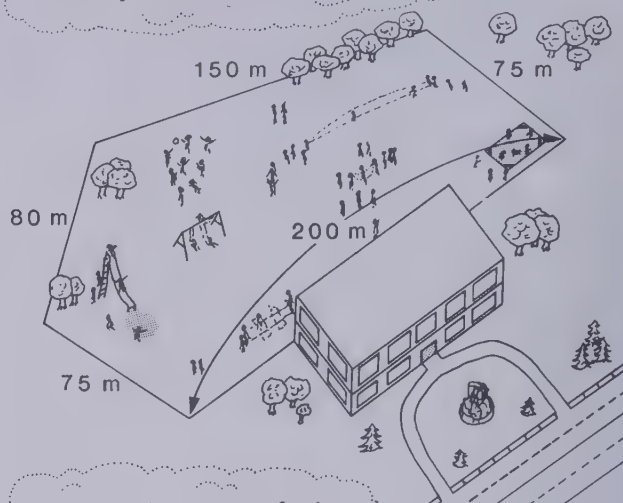
Jack walked around the schoolyard at its edge. How far did he walk?

Add the lengths of the five sides.

$$\begin{array}{r} 21 \\ 200 \\ 75 \\ 80 \\ 150 \\ 75 \\ \hline 580 \end{array}$$

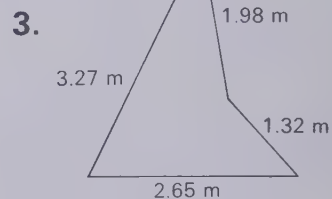
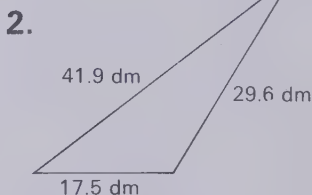
Jack walked 580 m.

The distance around a shape is its **perimeter**.

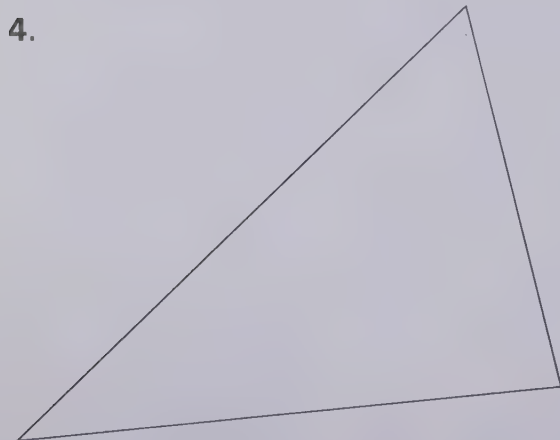


Working Together

Find the perimeter of each shape.



Use a centimetre ruler and find the perimeter of each.



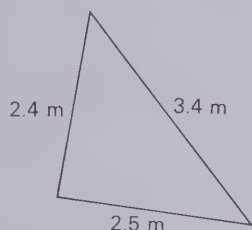
6. the front cover of this book

7. the bottom of a crayon box

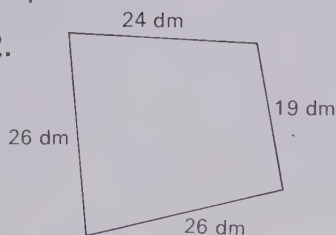
Exercises

Find the perimeter of each shape.

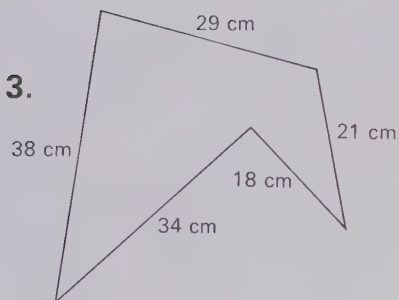
1.



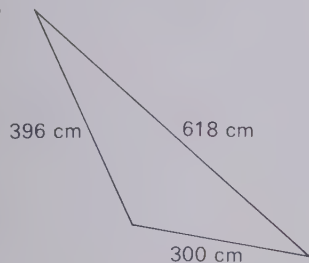
2.



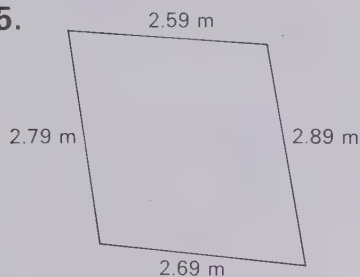
3.



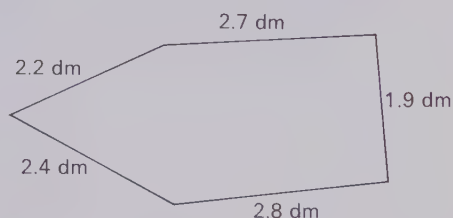
4.



5.

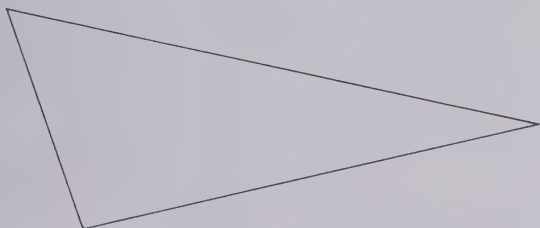


6.

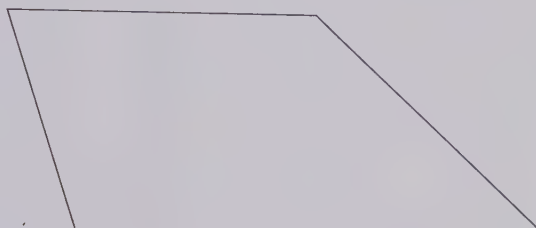


Use a centimetre ruler to find the perimeter of each.

7.



8.



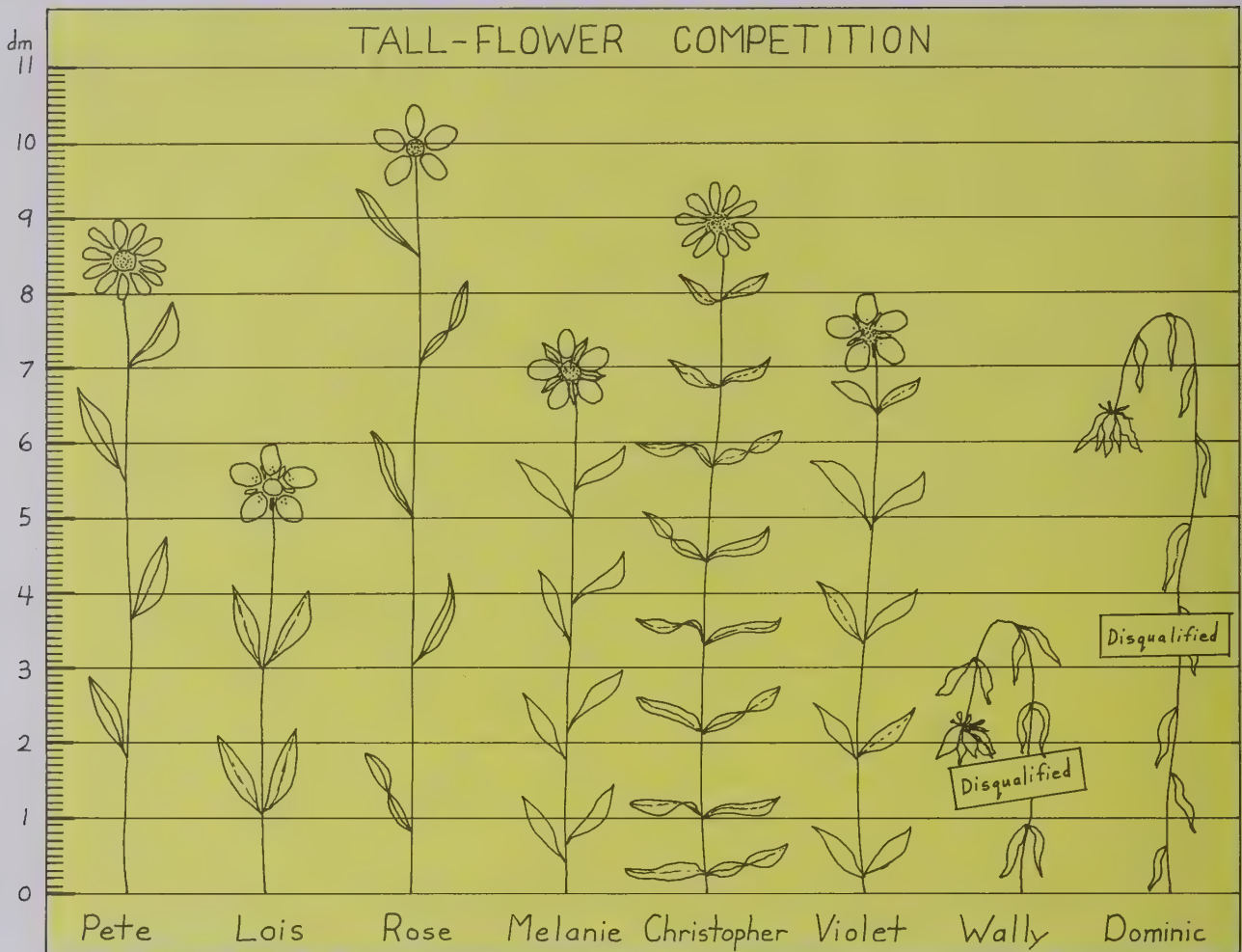
- | | |
|-------------------------------------|-------------------------------|
| 9. a sheet of paper | 10. a paper towel |
| 11. a sheet of paper folded in half | 12. the front of a crayon box |
| 13. a dollar bill | 14. the ruler you are using |

Solve.

- | | |
|--|---|
| 15. Jack's school building is 80 m long and 40 m wide. Find its perimeter. | 16. Find the perimeter of a square that has one side 5 cm long. |
| 17. Angela wants to make a pen for her rabbits. It will have the shape of a rectangle. One side will be 5 m long. Another side will be 3.5 m long. What will be its perimeter? | 18. Leah's family has a piece of land that has seven sides. The sides measure 700 m, 80 m, 70 m, 1500 m, 500 m, 400 m, and 480 m. Find the perimeter of this piece of land. |

Graphing

The graph shows one result in the flower-growing contests.



The numbers on the scale show decimetres.
The little marks show centimetres.

Rose's flower is the tallest.
It is 10.5 dm or 105 cm tall.

Working Together

Answer these questions.

1. Who grew the second tallest flower? How tall is it?
2. Who grew the shortest flower shown? How tall is it?
3. How much taller than Violet's flower is Rose's flower?
4. How much shorter than Pete's flower is Melanie's flower?
5. How many flowers are taller than Melanie's?
6. How many flowers are shorter than Christopher's?

Exercises

The judges allowed Wally and Dominic to replace their wilted flowers with others.

1. Use tracing paper and draw Wally's new flower. It is 1 m tall.

2. Use tracing paper and draw Dominic's new flower. It is 6.5 dm tall.

3. With Wally's and Dominic's new flowers in the contest, copy and complete this chart.

Position	Name	Flower Height		
		cm	dm	m
First	Rose	105	10.5	1.05
Second				

Each contestant in the flower-growing contest started with 24 seeds. They filled in this chart to show how many sprouted and bloomed.

	Sprouted	Bloomed	Shortest Flower Grown
Pete	22	18	60 cm
Lois	16	15	45 cm
Rose	12	9	0.30 m
Melanie	20	18	0.5 m
Christopher	16	12	5 dm
Violet	22	15	30 cm
Wally	8	6	25 cm
Dominic	18	12	50 cm

4. Draw a pictograph that shows the number of seeds that sprouted for each contestant.

5. Draw a bar graph that shows the number of flowers that bloomed for each contestant.

6. Sketch a graph like the one on page 214 to show the shortest flower grown by each contestant.

Area in Square Centimetres

The side of each square is 1 cm long.

The area of each square is 1 square centimetre.

1 cm²

Two halves of
a square centimetre
equal 1 cm².

One-half of 2 cm²
equals 1 cm².

The area covered by
this shape is 7 cm².

7 cm²

Exercises

What is
the area of

1. the square?
2. the rectangle
that is not
a square?
3. the triangle?
4. the pentagon?
5. the hexagon?
6. the octagon?

The pentagon
is 5 cm tall.

List the shapes
in order

7. from tallest
to shortest.
8. from least to
greatest area.

A

B

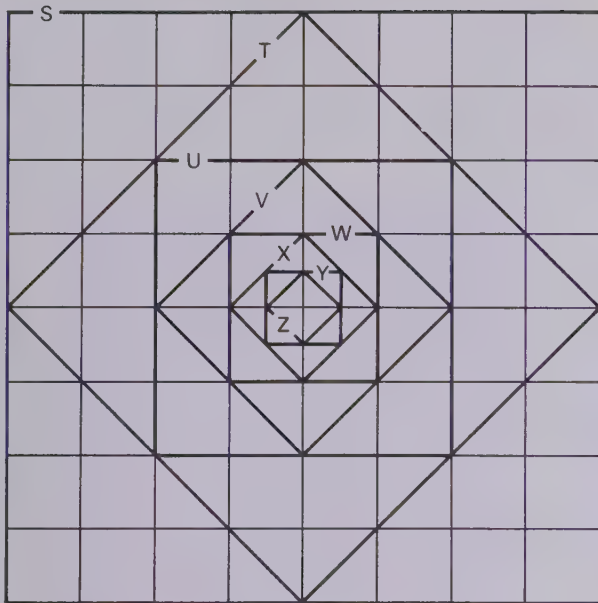
C

D

E

G

F



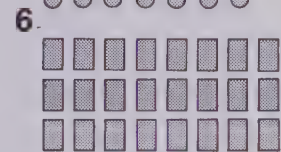
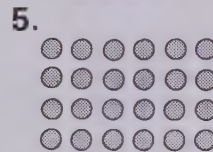
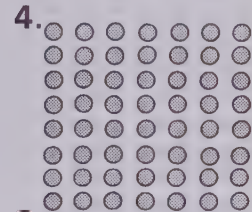
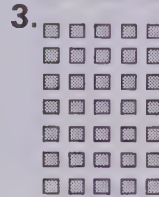
Copy and complete this chart for the eight squares above.

	Square	Area in square centimetres
9.	S	64
10.	T	?
11.	U	?
12.	V	?
13.	W	?
14.	X	?
*15.	Y	?
*16.	Z	?

Try to draw these 16 shapes. Use centimetre graph paper.

*17.	Area in square centimetres			
rectangle	4	8	9	20
pentagon	4	8	9	20
square	4	8	9	20
triangle	4	8	9	20

Write two multiplication sentences and two division sentences to match each array.



Copy and complete.

7. $7 \times \begin{array}{c} \text{array of 6 squares} \\ \end{array} = 42$ 8. $4 \times \begin{array}{c} \text{array of 3 squares} \\ \end{array} = 32$
 $42 \div 7 = \begin{array}{c} \text{array of 6 squares} \\ \end{array}$ $32 \div 4 = \begin{array}{c} \text{array of 3 squares} \\ \end{array}$
9. $25 \div 5 = \begin{array}{c} \text{array of 5 squares} \\ \end{array}$ 10. $63 \div 9 = \begin{array}{c} \text{array of 7 squares} \\ \end{array}$
 $5 \times \begin{array}{c} \text{array of 5 squares} \\ \end{array} = 25$ $9 \times \begin{array}{c} \text{array of 7 squares} \\ \end{array} = 63$
11. $6 \times \begin{array}{c} \text{array of 8 squares} \\ \end{array} = 48$ 12. $72 \div 8 = \begin{array}{c} \text{array of 9 squares} \\ \end{array}$
 $48 \div 6 = \begin{array}{c} \text{array of 8 squares} \\ \end{array}$ $8 \times \begin{array}{c} \text{array of 9 squares} \\ \end{array} = 72$

Multiply.

13. 9×5 14. 4×7
15. 5×8 16. 8×6
17. 7×70 18. 5×60
19. 8×50 20. 9×80

Divide.

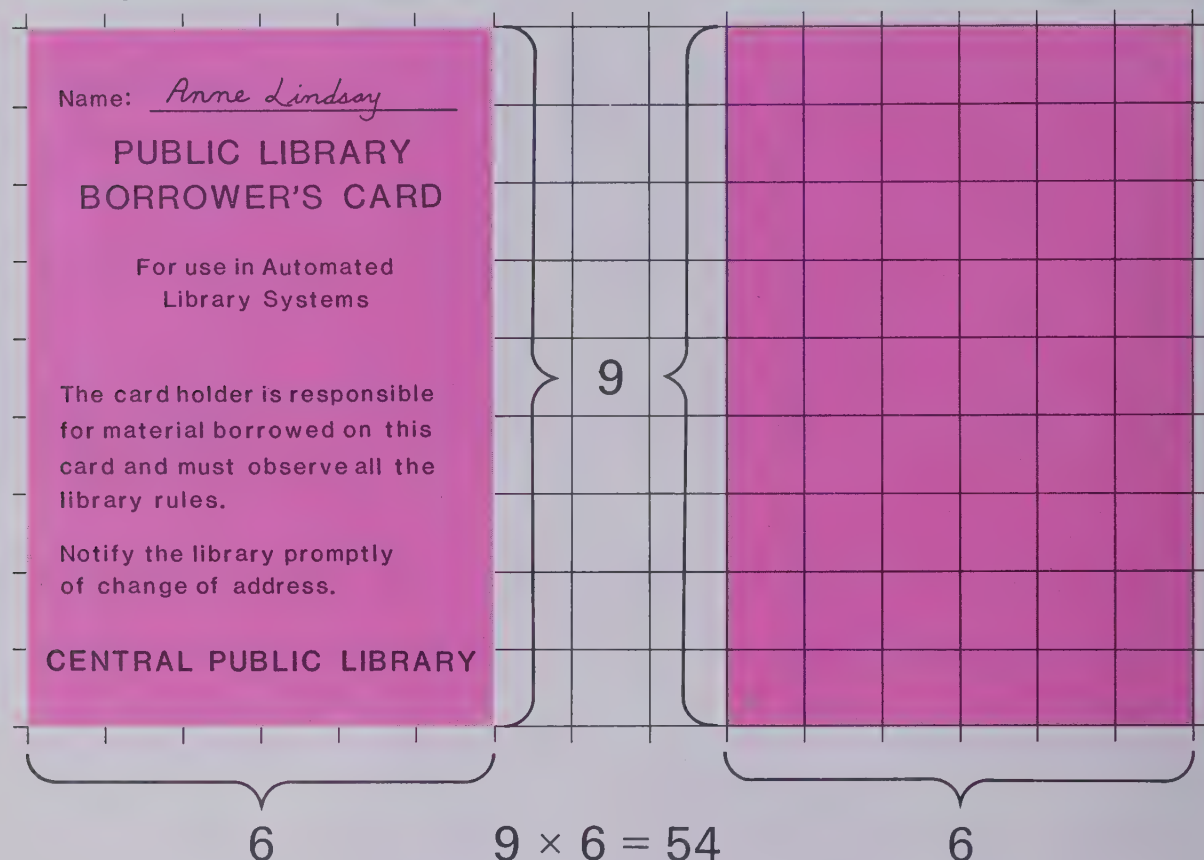
21. $5 \overline{)20}$ 22. $9 \overline{)54}$
23. $4 \overline{)36}$ 24. $6 \overline{)36}$
25. $9 \overline{)180}$ 26. $8 \overline{)640}$
27. $7 \overline{)280}$ 28. $6 \overline{)300}$

KEEPING SHARP

Using Multiplication to Find Area

The square centimetres that match a rectangle form an array.

Multiplication tells how many are in an array.



There are 54 cm² covered by the library card.

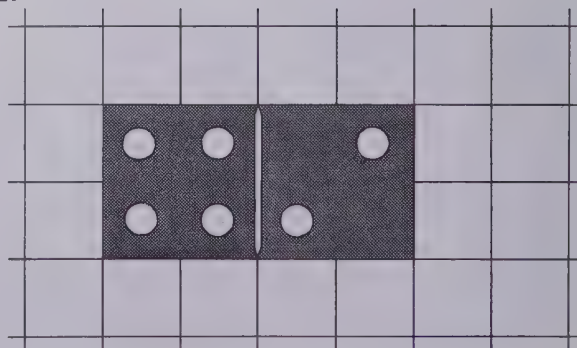
Working Together

Write two multiplication sentences that give you the area of each of these.

1.



2.



Exercises

Write two multiplication sentences that give the area of each of these.

1. 




2. 

3. 

4. 

5. 

Use centimetre graph paper. Draw a rectangle for each of these. Then, complete the multiplication sentence.

- | | |
|---|---|
| 6. $3 \times 6 =$  | 7. $4 \times 7 =$  |
| 8. $4 \times 4 =$  | 9. $8 \times 5 =$  |
| 10. $5 \times$  $= 15$ | 11. $3 \times$  $= 24$ |
| 12. $4 \times$  $= 20$ | 13. $6 \times$  $= 36$ |

Multiply, divide, add, or subtract.

- $436 + 217$
- $6 \times \$30$
- $2000 - 532$
- $\$43.15 + \3.85
- $270 \div 9$
- $\$1.95 + \0.53
- $\$114 - \97
- 5×682
- $38 + 28$
- $\$3.02 - \2.76
- $200 \div 5$
- $\$128 + \75
- $6 \times \$7.04$
- $\$2836 + \4379
- $4460 - 2586$
- $\$6.31 - \1.73
- 7×58
- $5472 + 496$
- $\$49 - \26
- $\$720 \div 8$
- 9×70
- $300 \div 6$
- $785 - 357$
- $4 \times \$90$
- $490 \div 7$
- $\$37.42 - \31.80
- $9 \times \$594$
- $\$240 \div 3$
- 8×60

KEEPING SHARP

Area in Square Decimetres and Square Metres

The small square shows a square decimetre.

1 dm²

The large square shows a square metre.

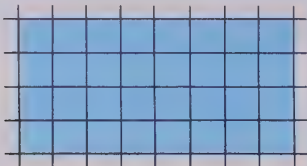
1 m²



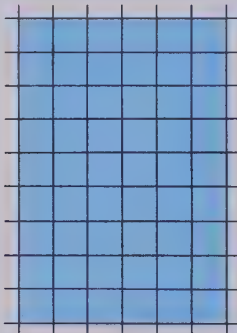
Exercises

If each square represents 1 dm², what is the area of each of these?

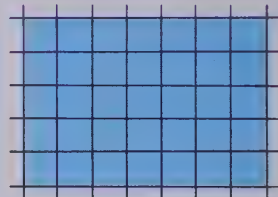
1.



2.

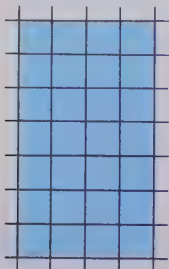


3.

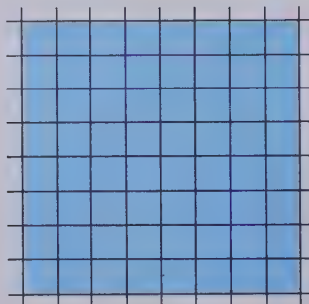


If each square represents 1 m², what is the area of each of these?

4.



5.



6.

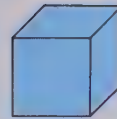


7. Look around. Name a shape that is about 1 dm² in size.

8. Look around. Name a shape that is about 1 m² in size.

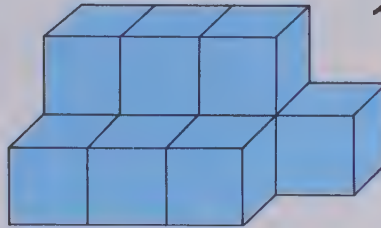
Volume in Cubic Centimetres

Each edge of the cube is 1 cm long.
The volume of the cube is 1 **cubic centimetre**.



1 cm³

You can count cubic centimetres
to find volumes of larger solids.

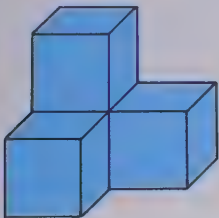


10 cm³

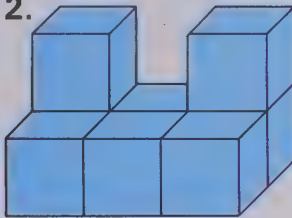
Exercises

Find the volume in cubic centimetres.

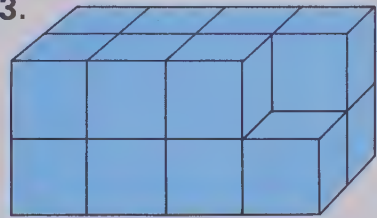
1.



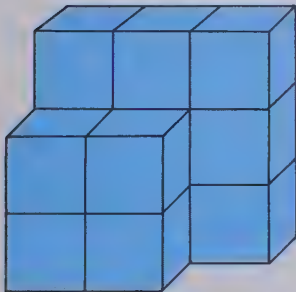
2.



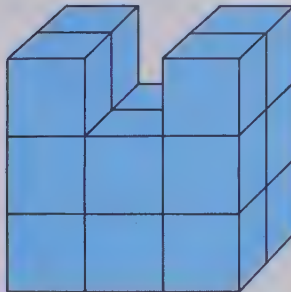
3.



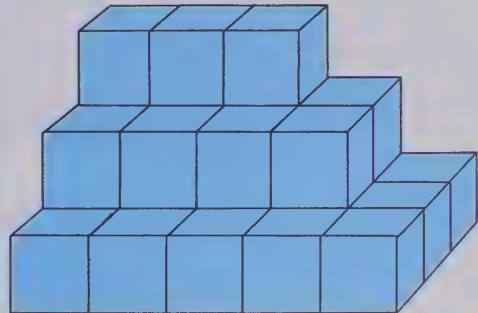
4.



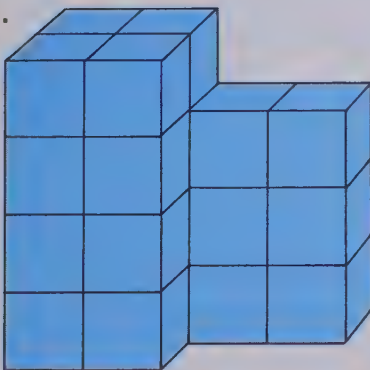
5.



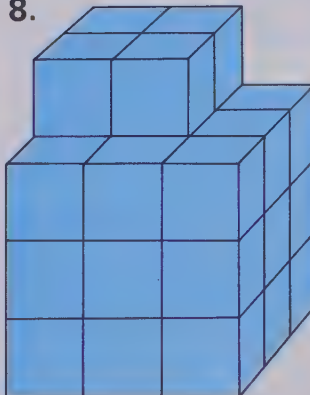
6.



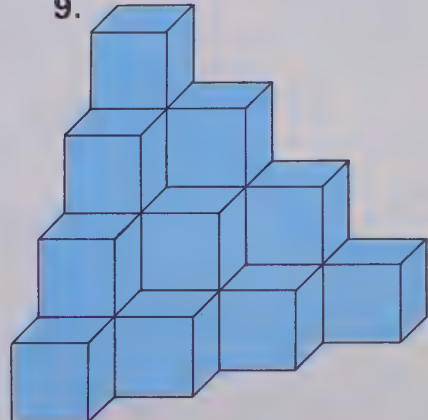
7.



8.



9.



Volume in Cubic Decimetres

A cubic decimetre looks like this.



Each edge of the cube is 1 dm long.



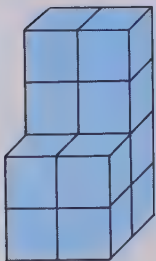
Exercises

Is it smaller than, about the same size as, or larger than a cubic decimetre?

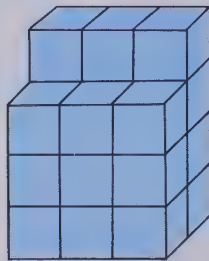
1. your two fists
2. your head
3. half a loaf of bread
4. a mailbox
5. a grapefruit
6. a basketball

If each little cube represents 1 dm^3 , what is the volume of each solid?

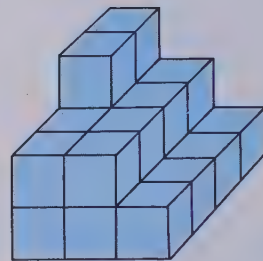
7.



8.



9.



Look around. Name any item with volume that seems to be

10. less than 1 dm^3 .
11. about 1 dm^3 .
12. greater than 1 dm^3 .

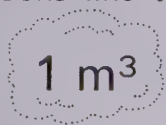
Choose the best estimate for

13. the number of cubic centimetres in a cubic decimetre.

10, 100, 1000, or 10 000

Volume in Cubic Metres

A cubic metre looks like this.



Each edge of the cube is 1 m long.

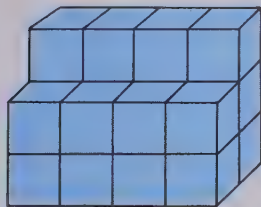
Exercises

Is it smaller than, about the same size as, or larger than a cubic metre?

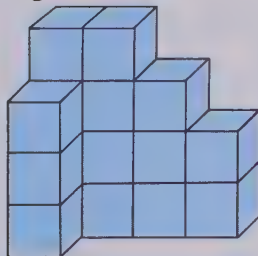
1. a television set
2. an automobile
3. the teacher's desk
4. a bale of hay
5. the solid suggested by a card table
6. the school trash bin

If each little cube represents 1 m^3 , what is the volume of each solid?

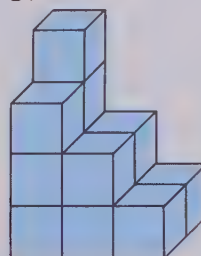
7.



8.



9.



Look around. Name any item with volume that seems to be

10. less than 1 m^3 .
11. about 1 m^3 .
12. greater than 1 m^3 .



Choose the best estimate for

13. the number of cubic decimetres in a cubic metre.

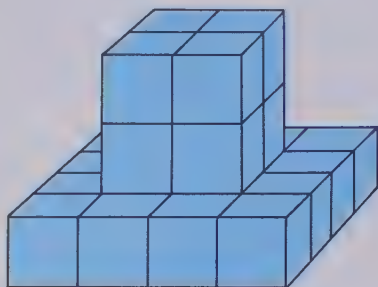
10, 100, 1000, or 10 000

Working with Models

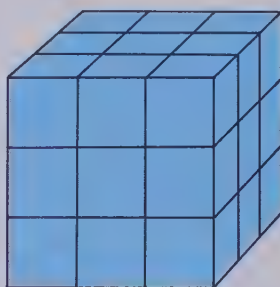
How many blocks are needed for a stack with three layers so that each layer suggests a square array?

Solutions are easy to find if you make models to match the problem.

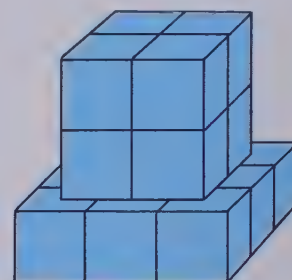
Here are three solutions.



24 blocks



27 blocks



17 blocks

Use blocks to help you solve each problem.

- 16 blocks are placed to form a square array. How many more blocks are needed to form the next largest square array?
- 27 blocks are stacked to form a cube. How many more blocks are needed to form the next largest cube?
- How many blocks are needed to surround one block (on all sides and at all corners)?
- How many blocks are needed to surround two blocks (on all sides and at all corners)?
- The class needs to build a model having a volume of 24 dm^3 . Show 3 different shapes for the model.
- The school needs a small building having room for 18 m^3 . Show 3 different shapes for the building.
- Stack 18 blocks in layers. Multiply the number of blocks in the first layer by 1, the number in the second layer by 2, and so on. Add all the products. What stacking gives the greatest sum?
- Build "pyramids" with blocks. Make a chart like this and fill it in. After you fill in 5 or 6 rows, try to guess this entry without building any more pyramids.






Layers	Blocks needed
1	1
2	3
3	6
4	?
10	?
















**PROBLEM
SOLVING**

Checking Up

Use a centimetre ruler.
Measure each line segment.

1. 
2. 
3. 

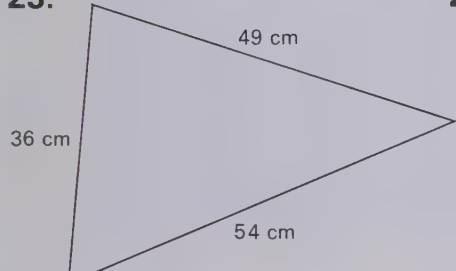
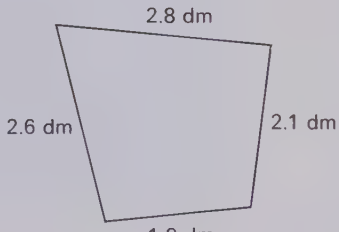
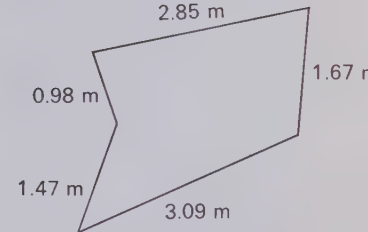
Copy and complete each sentence.

- | | | |
|--|---|--|
| 4. 287 cm =  m | 5. 12 dm =  m | 6. 1 dm =  cm |
| 7. 1.25 m =  cm | 8. 2 km =  m | 9. 7 cm =  dm |
| 10. 1 m =  dm | 11. 4000 m =  km | 12. 35 dm =  cm |
| 13. 0.6 m =  cm | 14. 1 km =  m | 15. 3 m =  dm |
| 16. 100 cm =  m | 17. 40 cm =  m | 18. 18 km =  m |

Which unit, the centimetre, the metre, or the kilometre would be best for measuring these?

- | | |
|-------------------------------|------------------------------------|
| 19. a fishing line | 20. a match stick |
| 21. from one town to the next | 22. from your school to the street |

Find the perimeter of each shape.

23. 
24. 
25. 

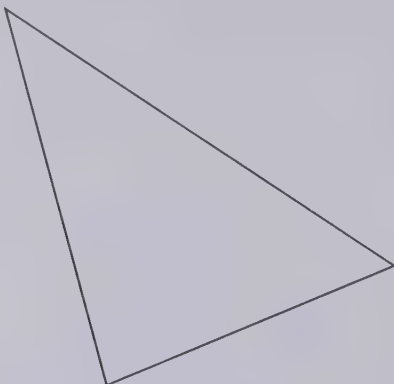
Solve.

26. The sides of a pentagon measure 15 cm, 17 cm, 22 cm, 18 cm, and 27 cm. What is the perimeter of the pentagon?
27. What is the perimeter of a square that has one side 8 m long?

Checking Up continues on next page.

Use a centimetre ruler and find the perimeter of each shape.

28.

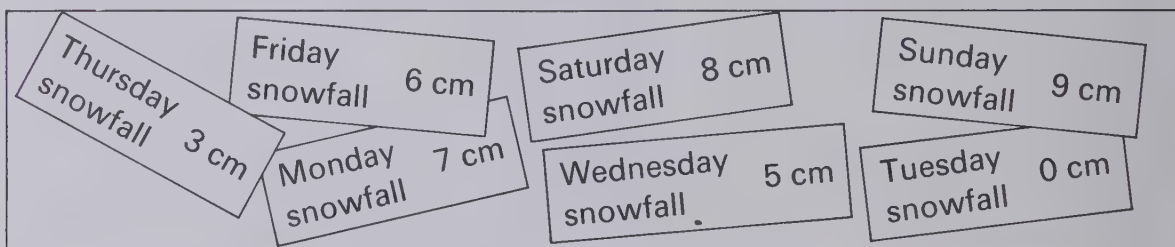


29.



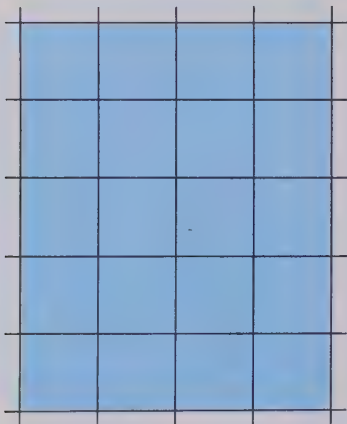
Draw a bar graph that shows this information.

30.



Give each area in square centimetres.

31.

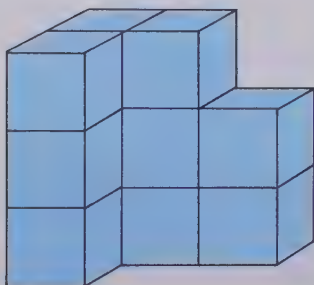


32.

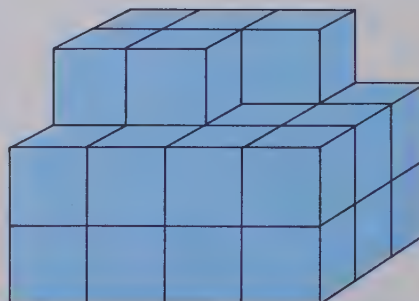


Give each volume in cubic centimetres.

33.



34.



Checking Skills

Add.

- | | | |
|--|--|---|
| 1. $\begin{array}{r} 34.6 \\ 3.4 \\ \hline \end{array}$ | 2. $\begin{array}{r} 60.72 \\ 13.94 \\ \hline \end{array}$ | 3. $\begin{array}{r} 1.78 \\ 5.37 \\ \hline \end{array}$ |
| 4. $\begin{array}{r} 36.3 \\ 26.9 \\ \hline \end{array}$ | 5. $\begin{array}{r} 7.9 \\ 4.6 \\ \hline \end{array}$ | 6. $\begin{array}{r} 48.72 \\ 9.65 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} \$9.79 \\ 2.81 \\ \hline \end{array}$ | 8. $\begin{array}{r} \$18.65 \\ 5.39 \\ \hline \end{array}$ | 9. $\begin{array}{r} \$90.33 \\ 44.83 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} 13.1 \\ 2.7 \\ \hline 14.1 \end{array}$ | 11. $\begin{array}{r} 5.3 \\ 26.8 \\ \hline 3.2 \end{array}$ | 12. $\begin{array}{r} 48.64 \\ 0.27 \\ \hline 21.93 \end{array}$ |
| 13. $\begin{array}{r} \$ 5.92 \\ 13.93 \\ \hline 0.76 \end{array}$ | 14. $\begin{array}{r} \$14.88 \\ 25.76 \\ \hline 5.92 \end{array}$ | 15. $\begin{array}{r} \$98.76 \\ 54.32 \\ \hline 10.98 \end{array}$ |

Subtract.

- | | | |
|---|---|---|
| 16. $\begin{array}{r} 44.3 \\ 31.8 \\ \hline \end{array}$ | 17. $\begin{array}{r} 19.67 \\ 6.83 \\ \hline \end{array}$ | 18. $\begin{array}{r} 48.97 \\ 42.48 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 93.0 \\ 75.3 \\ \hline \end{array}$ | 20. $\begin{array}{r} 34.5 \\ 9.9 \\ \hline \end{array}$ | 21. $\begin{array}{r} 13.16 \\ 9.64 \\ \hline \end{array}$ |
| 22. $\begin{array}{r} 81.24 \\ 22.27 \\ \hline \end{array}$ | 23. $\begin{array}{r} 35.1 \\ 26.5 \\ \hline \end{array}$ | 24. $\begin{array}{r} 45.8 \\ 8.9 \\ \hline \end{array}$ |
| 25. $\begin{array}{r} 50.1 \\ 11.8 \\ \hline \end{array}$ | 26. $\begin{array}{r} 87.01 \\ 12.23 \\ \hline \end{array}$ | 27. $\begin{array}{r} 90.0 \\ 37.5 \\ \hline \end{array}$ |
| 28. $\begin{array}{r} \$10.01 \\ 1.09 \\ \hline \end{array}$ | 29. $\begin{array}{r} \$40.11 \\ 39.47 \\ \hline \end{array}$ | 30. $\begin{array}{r} \$1.32 \\ 0.78 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} \$63.02 \\ 16.54 \\ \hline \end{array}$ | 32. $\begin{array}{r} \$16.44 \\ 8.59 \\ \hline \end{array}$ | 33. $\begin{array}{r} \$25.40 \\ 15.78 \\ \hline \end{array}$ |

Multiply.

- | | | |
|--|---|--|
| 1. $\begin{array}{r} 30 \\ 2 \\ \hline \end{array}$ | 2. $\begin{array}{r} 60 \\ 3 \\ \hline \end{array}$ | 3. $\begin{array}{r} 40 \\ 6 \\ \hline \end{array}$ |
| 4. $\begin{array}{r} 60 \\ 5 \\ \hline \end{array}$ | 5. $\begin{array}{r} 300 \\ 4 \\ \hline \end{array}$ | 6. $\begin{array}{r} 50 \\ 3 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 700 \\ 2 \\ \hline \end{array}$ | 8. $\begin{array}{r} 80 \\ 7 \\ \hline \end{array}$ | 9. $\begin{array}{r} 20 \\ 9 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} 50 \\ 4 \\ \hline \end{array}$ | 11. $\begin{array}{r} 400 \\ 5 \\ \hline \end{array}$ | 12. $\begin{array}{r} 60 \\ 8 \\ \hline \end{array}$ |

Divide.

- | | | |
|-------------------------|-------------------------|-------------------------|
| 13. $2 \overline{)40}$ | 14. $4 \overline{)800}$ | 15. $7 \overline{)210}$ |
| 16. $3 \overline{)120}$ | 17. $5 \overline{)250}$ | 18. $3 \overline{)210}$ |
| 19. $4 \overline{)240}$ | 20. $7 \overline{)490}$ | 21. $6 \overline{)480}$ |
| 22. $9 \overline{)540}$ | 23. $5 \overline{)400}$ | 24. $8 \overline{)400}$ |
| 25. $9 \overline{)720}$ | 26. $9 \overline{)630}$ | 27. $6 \overline{)600}$ |
| 28. $8 \overline{)720}$ | 29. $2 \overline{)100}$ | 30. $7 \overline{)420}$ |

Multiply.

- | | | |
|---|--|--|
| 31. $\begin{array}{r} 32 \\ 3 \\ \hline \end{array}$ | 32. $\begin{array}{r} 423 \\ 2 \\ \hline \end{array}$ | 33. $\begin{array}{r} 18 \\ 6 \\ \hline \end{array}$ |
| 34. $\begin{array}{r} 375 \\ 7 \\ \hline \end{array}$ | 35. $\begin{array}{r} 541 \\ 5 \\ \hline \end{array}$ | 36. $\begin{array}{r} 703 \\ 8 \\ \hline \end{array}$ |
| 37. $\begin{array}{r} 486 \\ 4 \\ \hline \end{array}$ | 38. $\begin{array}{r} 426 \\ 9 \\ \hline \end{array}$ | 39. $\begin{array}{r} 588 \\ 8 \\ \hline \end{array}$ |
| 40. $\begin{array}{r} \$436 \\ 6 \\ \hline \end{array}$ | 41. $\begin{array}{r} \$1.84 \\ 7 \\ \hline \end{array}$ | 42. $\begin{array}{r} \$7.89 \\ 9 \\ \hline \end{array}$ |

10 MULTIPLICATION

Multiplying Two-Digit Numbers

3 Roadcruisers cross Newfoundland from St. John's to Port aux Basques each day. Each can carry 47 passengers. How many can they carry in all?



Multiply 3 and 47.

$$\begin{array}{r} 47 \\ 3 \\ \hline 21 \end{array}$$

$3 \times 7 = 21$

or 2 tens 1 one.

$$\begin{array}{r} 2 \\ 47 \\ 3 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 47 \\ 3 \\ \hline 21 \\ 120 \\ \hline 120 \end{array}$$

$3 \times 4 \text{ tens} = 12 \text{ tens}$

and 2 more tens are 14 tens.

$$\begin{array}{r} 2 \\ 47 \\ 3 \\ \hline 141 \end{array}$$

This is the standard form for multiplying.

$$\begin{array}{r} 47 \\ 3 \\ \hline 21 \\ 120 \\ \hline 141 \end{array}$$

Add.



The standard form lets me write the product on the first line below the two factors.

The Roadcruisers can carry 141 passengers.

Working Together

Show each multiplication in the standard form.

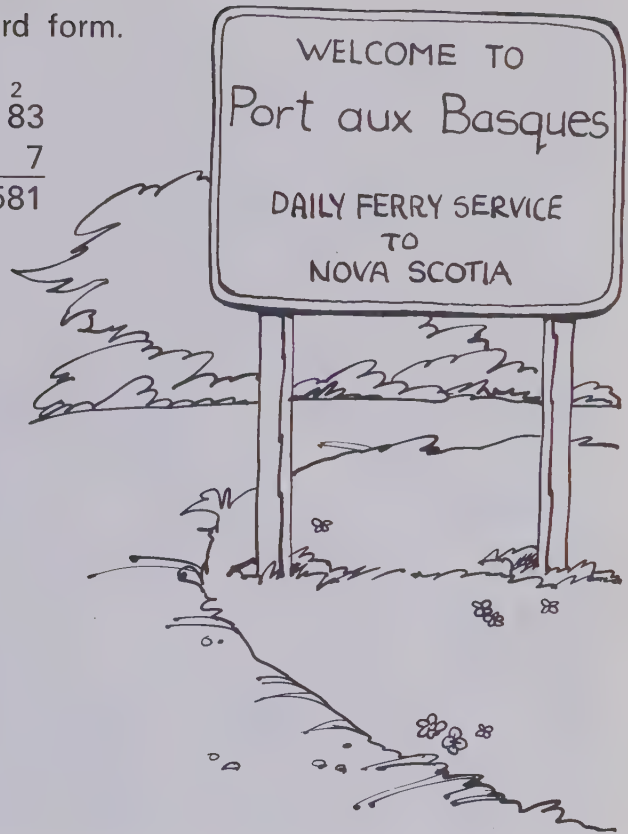
Example:
$$\begin{array}{r} 83 \\ 7 \\ \hline 21 \\ 560 \\ \hline 581 \end{array}$$
 becomes
$$\begin{array}{r} 83 \\ 7 \\ \hline 581 \end{array}$$

$7 \times 3 = 21$
 $7 \times 80 = 560$

1.
$$\begin{array}{r} 32 \\ 3 \\ \hline 6 \\ 90 \\ \hline 96 \end{array}$$
 2.
$$\begin{array}{r} 73 \\ 9 \\ \hline 27 \\ 630 \\ \hline 657 \end{array}$$
 3.
$$\begin{array}{r} 65 \\ 8 \\ \hline 40 \\ 480 \\ \hline 520 \end{array}$$

Multiply. Use the standard form.

4.
$$\begin{array}{r} 24 \\ 2 \\ \hline \end{array}$$
 5.
$$\begin{array}{r} 87 \\ 3 \\ \hline \end{array}$$
 6.
$$\begin{array}{r} 48 \\ 7 \\ \hline \end{array}$$



Exercises

Multiply. Use the standard form.

1.
$$\begin{array}{r} 16 \\ 4 \\ \hline \end{array}$$
 2.
$$\begin{array}{r} 21 \\ 8 \\ \hline \end{array}$$
 3.
$$\begin{array}{r} 94 \\ 5 \\ \hline \end{array}$$
 4.
$$\begin{array}{r} 54 \\ 6 \\ \hline \end{array}$$
 5.
$$\begin{array}{r} 96 \\ 2 \\ \hline \end{array}$$
 6.
$$\begin{array}{r} 56 \\ 7 \\ \hline \end{array}$$
 7.
$$\begin{array}{r} 35 \\ 5 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 22 \\ 9 \\ \hline \end{array}$$
 9.
$$\begin{array}{r} 93 \\ 4 \\ \hline \end{array}$$
 10.
$$\begin{array}{r} 99 \\ 3 \\ \hline \end{array}$$
 11.
$$\begin{array}{r} 47 \\ 8 \\ \hline \end{array}$$
 12.
$$\begin{array}{r} 39 \\ 7 \\ \hline \end{array}$$
 13.
$$\begin{array}{r} 30 \\ 8 \\ \hline \end{array}$$
 14.
$$\begin{array}{r} 31 \\ 4 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 87 \\ 2 \\ \hline \end{array}$$
 16.
$$\begin{array}{r} 62 \\ 5 \\ \hline \end{array}$$
 17.
$$\begin{array}{r} 64 \\ 7 \\ \hline \end{array}$$
 18.
$$\begin{array}{r} 26 \\ 3 \\ \hline \end{array}$$
 19.
$$\begin{array}{r} 90 \\ 9 \\ \hline \end{array}$$
 20.
$$\begin{array}{r} 95 \\ 7 \\ \hline \end{array}$$
 21.
$$\begin{array}{r} 64 \\ 9 \\ \hline \end{array}$$

22. 9×31 23. 5×47 24. 6×33 25. 6×71 26. 8×78
27. 2×49 28. 7×72 29. 6×27 30. 3×35 31. 6×48

Solve.

32. Mr. Brock travels 37 km on the bus each day. How far does he travel on the bus in 5 working days?
33. Adult fare for the Roadcruiser across Newfoundland is about \$23. About how much would 4 adults have to pay?

Multiplying Three-Digit Numbers



The ferry between Newfoundland and Nova Scotia carries about 345 vehicles each sailing. About how many vehicles will it carry in 4 sailings?

Multiply 4 and 345.

$$\begin{array}{r} ^2 3 ^2 4 ^2 5 \\ \underline{^2 4} \\ ^2 0 \end{array}$$

$4 \times 5 = 20$ or
2 tens 0 ones.

$$\begin{array}{r} ^1 3 ^2 4 ^2 5 \\ \underline{^2 4} \\ ^1 8 ^2 0 \end{array}$$

4×4 tens =
16 tens. 2 more
tens make 18 tens or
1 hundred 8 tens.

$$\begin{array}{r} ^1 3 ^2 4 ^2 5 \\ \underline{^2 4} \\ ^1 3 ^2 8 ^2 0 \end{array}$$

4×3 hundreds =
12 hundreds. 1 more
hundred makes
13 hundreds.

The ferry carries about 1380 vehicles in 4 sailings.

Exercises

Multiply.

$$\begin{array}{r} 1. \ 377 \\ \times \ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \ 371 \\ \times \ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \ 989 \\ \times \ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \ 284 \\ \times \ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \ 969 \\ \times \ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \ 721 \\ \times \ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \ 623 \\ \times \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \ 743 \\ \times \ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \ 502 \\ \times \ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \ 970 \\ \times \ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \ 513 \\ \times \ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \ 900 \\ \times \ 7 \\ \hline \end{array}$$

Multiply. The products can help you find the answer to the riddle.

$$\begin{array}{r} A \\ 175 \\ \times \ 4 \\ \hline \end{array}$$

$$\begin{array}{r} C \\ 315 \\ \times \ 8 \\ \hline \end{array}$$

$$\begin{array}{r} E \\ 472 \\ \times \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} F \\ 803 \\ \times \ 6 \\ \hline \end{array}$$

$$\begin{array}{r} H \\ 530 \\ \times \ 4 \\ \hline \end{array}$$

$$\begin{array}{r} I \\ 432 \\ \times \ 5 \\ \hline \end{array}$$

$$\begin{array}{r} K \\ 298 \\ \times \ 2 \\ \hline \end{array}$$

$$\begin{array}{r} L \\ 206 \\ \times \ 3 \\ \hline \end{array}$$

$$\begin{array}{r} O \\ 104 \\ \times \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} R \\ 767 \\ \times \ 8 \\ \hline \end{array}$$

$$\begin{array}{r} T \\ 543 \\ \times \ 6 \\ \hline \end{array}$$

$$\begin{array}{r} Y \\ 618 \\ \times \ 7 \\ \hline \end{array}$$

Riddle:

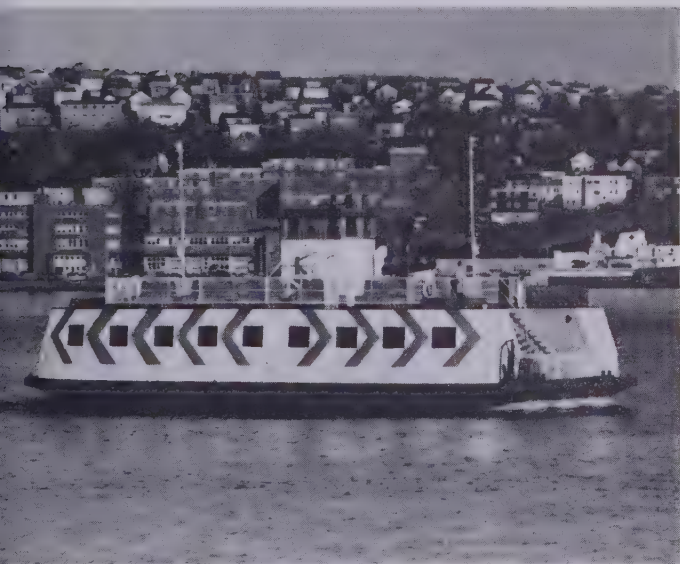
The trail a boat leaves in the water is called its *wake*. What could you call the wake of a ferry boat?

Answer:

4818 4248 6136 6136 4326
3258 6136 700 2160 618

Smaller ferries are used for shorter crossings.

13. Each day Mr. Sims uses a ferry 4 times. Each trip takes 13 min. How much time does it take for 4 trips?
14. How many hours does a ferry operate in a week when it operates for 14 h each day?
15. How much does it cost for 7 crossings if one costs 35¢?
16. One ferry travels about 375 m each crossing. About how far does it travel in 8 crossings?



Practice

Multiply.

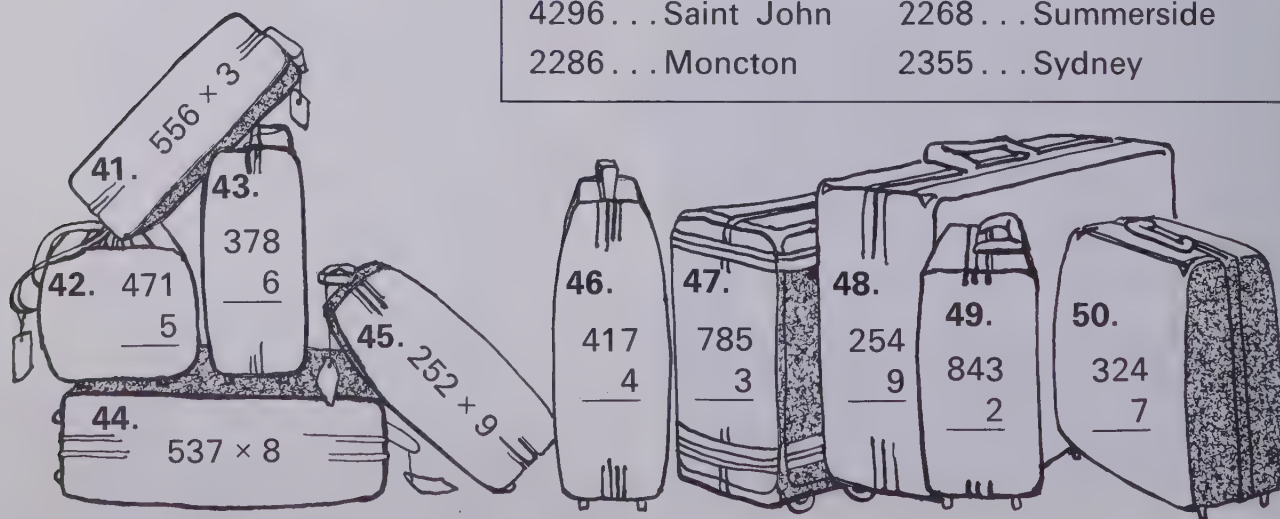
- | | | | | |
|-------------------|-------------------|-------------------|-------------------|--------------------|
| 1. 5×160 | 2. 4×412 | 3. 6×101 | 4. 3×611 | 5. 9×418 |
| 6. 3×122 | 7. 8×610 | 8. 2×404 | 9. 5×332 | 10. 7×777 |
-
- | | | | | | |
|--|--|--|--|--|--|
| 11. $\begin{array}{r} 487 \\ \times 6 \\ \hline \end{array}$ | 12. $\begin{array}{r} 169 \\ \times 7 \\ \hline \end{array}$ | 13. $\begin{array}{r} 493 \\ \times 3 \\ \hline \end{array}$ | 14. $\begin{array}{r} 279 \\ \times 4 \\ \hline \end{array}$ | 15. $\begin{array}{r} 141 \\ \times 9 \\ \hline \end{array}$ | 16. $\begin{array}{r} 435 \\ \times 7 \\ \hline \end{array}$ |
| 17. $\begin{array}{r} 391 \\ \times 9 \\ \hline \end{array}$ | 18. $\begin{array}{r} 210 \\ \times 7 \\ \hline \end{array}$ | 19. $\begin{array}{r} 326 \\ \times 4 \\ \hline \end{array}$ | 20. $\begin{array}{r} 555 \\ \times 9 \\ \hline \end{array}$ | 21. $\begin{array}{r} 246 \\ \times 8 \\ \hline \end{array}$ | 22. $\begin{array}{r} 601 \\ \times 4 \\ \hline \end{array}$ |
-
- | | | |
|------------------------------------|------------------------------------|------------------------------------|
| 23. $4 \times 3 \times 7 \times 5$ | 24. $5 \times 9 \times 3 \times 2$ | 25. $8 \times 7 \times 0 \times 9$ |
| 26. $3 \times 3 \times 3 \times 3$ | 27. $8 \times 8 \times 8 \times 8$ | 28. $9 \times 7 \times 1 \times 4$ |

Many of these products are not correct.
Copy the exercises and ring the errors
you find. Then multiply correctly.

- | | | | | | |
|---|---|---|---|---|--|
| 29. $\begin{array}{r} 312 \\ \times 3 \\ \hline 936 \end{array}$ | 30. $\begin{array}{r} 646 \\ \times 3 \\ \hline 1928 \end{array}$ | 31. $\begin{array}{r} 736 \\ \times 5 \\ \hline 3580 \end{array}$ | 32. $\begin{array}{r} 812 \\ \times 8 \\ \hline 6490 \end{array}$ | 33. $\begin{array}{r} 407 \\ \times 6 \\ \hline 2442 \end{array}$ | 34. $\begin{array}{r} 47 \\ \times 9 \\ \hline 3663 \end{array}$ |
| 35. $\begin{array}{r} 234 \\ \times 8 \\ \hline 1642 \end{array}$ | 36. $\begin{array}{r} 182 \\ \times 8 \\ \hline 1456 \end{array}$ | 37. $\begin{array}{r} 817 \\ \times 4 \\ \hline 3268 \end{array}$ | 38. $\begin{array}{r} 582 \\ \times 9 \\ \hline 4738 \end{array}$ | 39. $\begin{array}{r} 325 \\ \times 6 \\ \hline 1850 \end{array}$ | 40. $\begin{array}{r} 901 \\ \times 7 \\ \hline 637 \end{array}$ |

Where would you send each suitcase?

1686 . . . Fredericton	1668 . . . Charlottetown
4296 . . . Saint John	2268 . . . Summerside
2286 . . . Moncton	2355 . . . Sydney





Adult airfare from Halifax to Fredericton is \$39.

51. How much would it cost for 4 adult fares from Halifax to Fredericton?
53. A child's fare from Halifax to Fredericton is \$26. How much would tickets cost for 4 children?
55. If Flight 667 carries about 225 passengers each week, about how many does it carry in 4 weeks?
57. Airfares from Fredericton to Montreal are \$56 for adults and \$37 for children. How much would 3 adult fares be?
52. How much would it cost for 8 adult fares from Halifax to Fredericton?
- *54. The Gilbert family travelled from Halifax to Fredericton. How much were their 2 adult and 3 children's fares?
56. If Flight 662 carries about 35 passengers each day, about how many does it carry in a week?
- *58. How much would tickets from Fredericton to Montreal cost the Gilbert family?

Estimating Products



Guy's mother spends 28 min on the Metro each day. About how many minutes does she spend on the Metro in 5 working days?



To estimate the number of minutes that Guy's mother spends on the Metro, round 28 to the nearest ten.

28 rounds to 30.

Multiply 5 and 30.

$$\begin{array}{r} 30 \\ 5 \\ \hline 150 \end{array}$$

How many hours is 150 min?

Guy's mother spends 150 min on the Metro in 5 working days.

Working Together

Round to the nearest ten.

1. 17 2. 51 3. 85

Round to the nearest ten and multiply.

7. $\begin{array}{r} 86 \\ 5 \end{array}$ 8. $\begin{array}{r} 33 \\ 7 \end{array}$ 9. 4×28

Round to the nearest hundred.

4. 309 5. 281 6. 450

Round to the nearest hundred and multiply.

10. $\begin{array}{r} 328 \\ 4 \end{array}$ 11. $\begin{array}{r} 596 \\ 2 \end{array}$ 12. 5×187

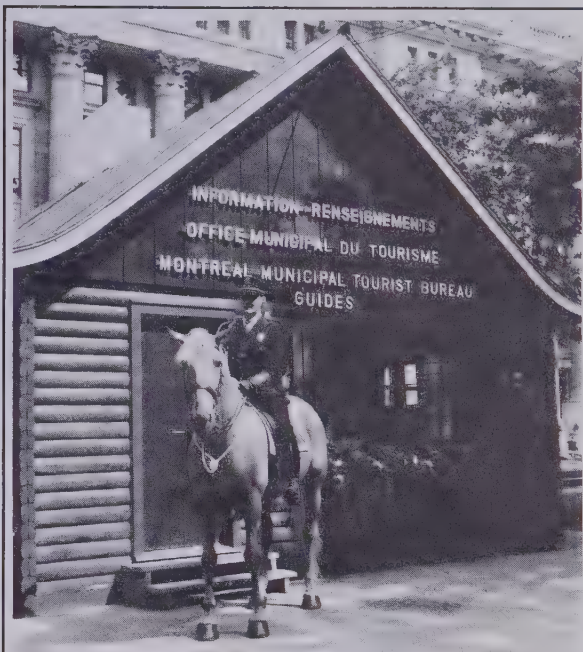
Exercises

Round the two-digit factors to the nearest ten. Round the three-digit factors to the nearest hundred. Then multiply to estimate each product.

1. $\begin{array}{r} 91 \\ 4 \end{array}$ 2. $\begin{array}{r} 467 \\ 2 \end{array}$ 3. $\begin{array}{r} 112 \\ 9 \end{array}$
4. $\begin{array}{r} 159 \\ 3 \end{array}$ 5. $\begin{array}{r} 32 \\ 8 \end{array}$ 6. $\begin{array}{r} 215 \\ 4 \end{array}$
7. $\begin{array}{r} 49 \\ 2 \end{array}$ 8. $\begin{array}{r} 276 \\ 5 \end{array}$ 9. $\begin{array}{r} 43 \\ 7 \end{array}$
10. $\begin{array}{r} 750 \\ 6 \end{array}$ 11. $\begin{array}{r} 806 \\ 5 \end{array}$ 12. $\begin{array}{r} 99 \\ 3 \end{array}$

A count showed 425 people passed through one turnstile in one hour. Use this number to estimate

13. how many pass through 5 turnstiles in 1 h.
14. how many pass through 1 turnstile in 8 h.
- *15. how many pass through 5 turnstiles in 8 h.



If the Tourist Bureau has about 385 visitors each day and gives each visitor a map and 2 guide folders,

1. estimate the number of maps and folders needed for 6 d.
2. If maps come in bundles with 575 in each bundle, estimate whether there are enough maps in 4 bundles to last for 6 d.

**PROBLEM
SOLVING**

Multiplying Two-Digit Numbers by Multiples of Ten

The tour boat on the St. Lawrence River
sells about 75 of these post cards each day.
About how many post cards will be sold in 30 d?



Multiply 30 and 75.

For the product
$$\begin{array}{r} 75 \\ 30 \\ \hline \end{array}$$
 3 tens 0 ones

you need to know how
to multiply 0 and 75

$$\begin{array}{r} 75 \\ 30 \\ \hline -0 \end{array}$$

When 0 is a factor,
the product is 0.

and how to
multiply 3 and 75.

$$\begin{array}{r} 1 \\ 75 \\ 30 \\ \hline 2250 \end{array}$$

3 tens \times 75 =
225 tens or 2250.

About 2250 post cards will be sold in 30 d.

Working Together

Use the first statement to help you complete the other multiplication statements.

1. $7 \times 21 = 147$

$7 \text{ tens} \times 21 = \boxed{} \text{ tens}$

$70 \times 21 = \boxed{}$

2. $2 \times 38 = 76$

$2 \text{ tens} \times 38 = \boxed{} \text{ tens}$

$20 \times 38 = \boxed{}$

3. $49 \times 49 = 294$

$49 \times 49 = \boxed{} \text{ tens}$

$49 \times 49 = \boxed{}$

Write 0 in the ones place.

Then multiply by 3 (tens).

Multiply.

4. $\begin{array}{r} 21 \\ 30 \\ \hline 0 \end{array}$

5. $\begin{array}{r} 72 \\ 30 \\ \hline \end{array}$

6. $\begin{array}{r} 68 \\ 30 \\ \hline \end{array}$

7. $\begin{array}{r} 32 \\ 60 \\ \hline \end{array}$

8. $\begin{array}{r} 23 \\ 10 \\ \hline \end{array}$

9. $\begin{array}{r} 78 \\ 40 \\ \hline \end{array}$

Exercises

Multiply.

1. $\begin{array}{r} 14 \\ 20 \\ \hline \end{array}$

2. $\begin{array}{r} 23 \\ 80 \\ \hline \end{array}$

3. $\begin{array}{r} 17 \\ 70 \\ \hline \end{array}$

4. $\begin{array}{r} 29 \\ 40 \\ \hline \end{array}$

5. $\begin{array}{r} 34 \\ 10 \\ \hline \end{array}$

6. $\begin{array}{r} 44 \\ 50 \\ \hline \end{array}$

7. $\begin{array}{r} 89 \\ 30 \\ \hline \end{array}$

8. $\begin{array}{r} 62 \\ 40 \\ \hline \end{array}$

9. $\begin{array}{r} 36 \\ 90 \\ \hline \end{array}$

10. $\begin{array}{r} 56 \\ 30 \\ \hline \end{array}$

11. $\begin{array}{r} 45 \\ 80 \\ \hline \end{array}$

12. $\begin{array}{r} 36 \\ 40 \\ \hline \end{array}$

13. $\begin{array}{r} 52 \\ 80 \\ \hline \end{array}$

14. $\begin{array}{r} 54 \\ 70 \\ \hline \end{array}$

15. $\begin{array}{r} 37 \\ 50 \\ \hline \end{array}$

16. $\begin{array}{r} 83 \\ 60 \\ \hline \end{array}$

17. $\begin{array}{r} 57 \\ 20 \\ \hline \end{array}$

18. $\begin{array}{r} 94 \\ 90 \\ \hline \end{array}$

19. $\begin{array}{r} 76 \\ 20 \\ \hline \end{array}$

20. $\begin{array}{r} 66 \\ 60 \\ \hline \end{array}$

21. $\begin{array}{r} 85 \\ 90 \\ \hline \end{array}$

22. $\begin{array}{r} 85 \\ 40 \\ \hline \end{array}$

23. $\begin{array}{r} 39 \\ 70 \\ \hline \end{array}$

24. $\begin{array}{r} 63 \\ 20 \\ \hline \end{array}$

25. $\begin{array}{r} 37 \\ 30 \\ \hline \end{array}$

26. $\begin{array}{r} 75 \\ 60 \\ \hline \end{array}$

27. $\begin{array}{r} 56 \\ 50 \\ \hline \end{array}$

28. $\begin{array}{r} 34 \\ 80 \\ \hline \end{array}$

Add.

1. $\begin{array}{r} 48 \\ 120 \\ \hline \end{array}$

2. $\begin{array}{r} 23 \\ 1840 \\ \hline \end{array}$

3. $\begin{array}{r} 256 \\ 640 \\ \hline \end{array}$

4. $\begin{array}{r} 31 \\ 930 \\ \hline \end{array}$

5. $\begin{array}{r} 704 \\ 7920 \\ \hline \end{array}$

6. $\begin{array}{r} 243 \\ 270 \\ \hline \end{array}$

7. $\begin{array}{r} 86 \\ 860 \\ \hline \end{array}$

8. $\begin{array}{r} 532 \\ 4560 \\ \hline \end{array}$

9. $\begin{array}{r} 96 \\ 1920 \\ \hline \end{array}$

10. $\begin{array}{r} 248 \\ 930 \\ \hline \end{array}$

11. $\begin{array}{r} 336 \\ 2880 \\ \hline \end{array}$

12. $\begin{array}{r} 68 \\ 340 \\ \hline \end{array}$

13. $\begin{array}{r} 168 \\ 960 \\ \hline \end{array}$

14. $\begin{array}{r} 664 \\ 2490 \\ \hline \end{array}$

15. $\begin{array}{r} 273 \\ 390 \\ \hline \end{array}$

16. $\begin{array}{r} 295 \\ 4720 \\ \hline \end{array}$

17. $\begin{array}{r} 288 \\ 720 \\ \hline \end{array}$

KEEPING SHARP

Multiplying Two-Digit Numbers by Two-Digit Numbers

An elevator in the CN Tower in Toronto can carry 22 passengers each trip. On busy days, it can make 20 to 30 trips each hour. How many passengers can the elevator carry in 25 trips?

Multiply 25 and 22.

For the product

$$\begin{array}{r} 22 \\ 25 \\ \hline \end{array}$$

2 tens 5 ones

you need to know how
to multiply 5 and 22

$$\begin{array}{r} 1 \\ 22 \\ 25 \\ \hline 110 \end{array}$$

and how to
multiply 2 and 22.

$$\begin{array}{r} 1 \\ 22 \\ 25 \\ \hline 110 \\ 440 \end{array}$$

2 tens \times 22 =
44 tens or 440.

Then add.

$$\begin{array}{r} 1 \\ 22 \\ 25 \\ \hline 110 \\ 440 \\ \hline 550 \end{array}$$

The elevator can carry
550 passengers in 25 trips.



Working Together

Multiply by following the steps.

1. 14
32

Multiply 2 and 14.

Write 0 in the ones place. 


Then multiply 3 and 14.

Add. 

• • • 3 tens \times 14 = 42 tens.

2. 87
54

Multiply 4 and 87. \longrightarrow

Write 0 in the ones place. 

Then multiply 5 and 87.

Add. 

5 tens \times 87 = 435 tens.

Multiply.

- | | | | |
|--------------|--------------|--------------|--------------|
| 3. 23 | 4. 72 | 5. 43 | 6. 96 |
| 31 | 26 | 52 | 48 |

Exercises

Multiply.

- | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|
| 1. 14 | 2. 22 | 3. 36 | 4. 47 | 5. 80 | 6. 67 | 7. 43 |
| 12 | 34 | 22 | 17 | 19 | 51 | 62 |

- | | | | | | | |
|-------|-------|--------|--------|--------|--------|--------|
| 8. 68 | 9. 81 | 10. 66 | 11. 35 | 12. 33 | 13. 41 | 14. 56 |
| 14 | 18 | 15 | 42 | 48 | 25 | 37 |

- 15.** 71×69 **16.** 29×31 **17.** 75×34 **18.** 15×32 **19.** 69×44
20. 37×17 **21.** 25×28 **22.** 49×53 **23.** 76×76 **24.** 89×98

Solve.

- 25.** The Sky Pod on the CN Tower is 350 m above the ground. An elevator travels 6 m in each second. Can an elevator reach the Sky Pod in 58 s?
- *26.** The CN Tower is open for visitors 13 h each day during the winter months. How many hours is it open for visitors in February?

Practice

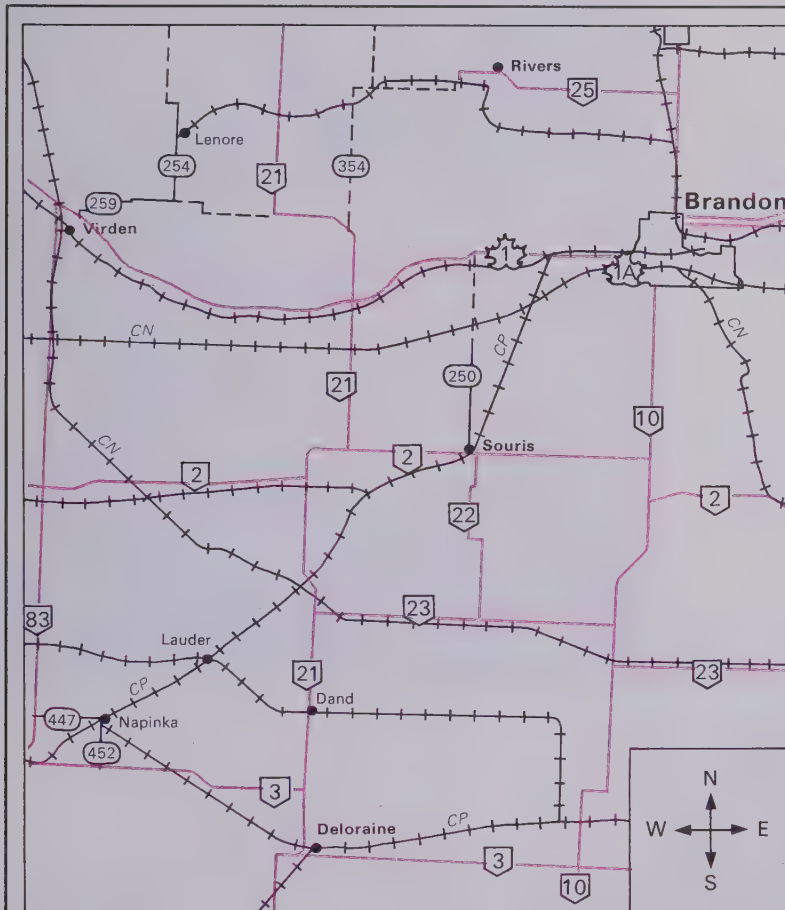
Multiply.

- | | | |
|---|---|---|
| 1. $\begin{array}{r} 26 \\ 14 \\ \hline \end{array}$ | 2. $\begin{array}{r} 49 \\ 24 \\ \hline \end{array}$ | 3. $\begin{array}{r} 23 \\ 32 \\ \hline \end{array}$ |
| 4. $\begin{array}{r} 54 \\ 53 \\ \hline \end{array}$ | 5. $\begin{array}{r} 78 \\ 43 \\ \hline \end{array}$ | 6. $\begin{array}{r} 37 \\ 74 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 85 \\ 28 \\ \hline \end{array}$ | 8. $\begin{array}{r} 16 \\ 61 \\ \hline \end{array}$ | 9. $\begin{array}{r} 68 \\ 35 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} 72 \\ 87 \\ \hline \end{array}$ | 11. $\begin{array}{r} 39 \\ 75 \\ \hline \end{array}$ | 12. $\begin{array}{r} 83 \\ 17 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 14 \\ 66 \\ \hline \end{array}$ | 14. $\begin{array}{r} 96 \\ 48 \\ \hline \end{array}$ | 15. $\begin{array}{r} 52 \\ 26 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 47 \\ 98 \\ \hline \end{array}$ | 17. $\begin{array}{r} 88 \\ 31 \\ \hline \end{array}$ | 18. $\begin{array}{r} 97 \\ 42 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 76 \\ 34 \\ \hline \end{array}$ | 20. $\begin{array}{r} 95 \\ 33 \\ \hline \end{array}$ | 21. $\begin{array}{r} 94 \\ 13 \\ \hline \end{array}$ |
| 22. $\begin{array}{r} 64 \\ 64 \\ \hline \end{array}$ | 23. $\begin{array}{r} 92 \\ 81 \\ \hline \end{array}$ | 24. $\begin{array}{r} 71 \\ 22 \\ \hline \end{array}$ |
| 25. $\begin{array}{r} 54 \\ 15 \\ \hline \end{array}$ | 26. $\begin{array}{r} 83 \\ 25 \\ \hline \end{array}$ | 27. $\begin{array}{r} 58 \\ 64 \\ \hline \end{array}$ |
| 28. $\begin{array}{r} 75 \\ 92 \\ \hline \end{array}$ | 29. $\begin{array}{r} 57 \\ 99 \\ \hline \end{array}$ | 30. $\begin{array}{r} 47 \\ 83 \\ \hline \end{array}$ |
| 31. $\begin{array}{r} 65 \\ 14 \\ \hline \end{array}$ | 32. $\begin{array}{r} 77 \\ 55 \\ \hline \end{array}$ | 33. $\begin{array}{r} 51 \\ 96 \\ \hline \end{array}$ |
| 34. $\begin{array}{r} 82 \\ 47 \\ \hline \end{array}$ | 35. $\begin{array}{r} 63 \\ 27 \\ \hline \end{array}$ | 36. $\begin{array}{r} 83 \\ 51 \\ \hline \end{array}$ |
| 37. $\begin{array}{r} 52 \\ 19 \\ \hline \end{array}$ | 38. $\begin{array}{r} 43 \\ 77 \\ \hline \end{array}$ | 39. $\begin{array}{r} 50 \\ 29 \\ \hline \end{array}$ |



Land is flat and highways are straight on the Prairies.

40. How far does a car travel in 13 h if it goes 95 km in each hour?
41. It is 571 km from Winnipeg to Regina. Can a car that travels 85 km each hour make the trip in 7 h?
42. It is 1050 km across Manitoba and Saskatchewan. Can a car travelling 85 km each hour make the trip in 13 h?
43. If a car can travel 12 km on each litre of gasoline, how far can it travel on 90 L?
- *44. How much gasoline will a car need to go 1800 km if it uses 12 L to go 100 km?



The numbers on the map are highway numbers. What directions would you give someone who wanted to go from Brandon

1. to Souris?
2. to Napinka?

Where would you be if you travel

3. south from Brandon on Highway 10, west on Highway 23, and then south on Highway 21 to the railroad?

**PROBLEM
SOLVING**

Multiplying Three-Digit Numbers by Multiples of Ten

In April, 60 VIA trains travel west across the mountains. Each one can carry 276 passengers. How many passengers can the VIA trains carry west across the mountains in April?

Multiply 60 and 276.

For the product

$$\begin{array}{r} 276 \\ 60 \times \end{array}$$

6 tens 0 ones

you need to know how to multiply 0 and 276

$$\begin{array}{r} 276 \\ 0 \times \end{array}$$

When 0 is a factor, the product is 0.

and how to multiply 6 and 276.

$$\begin{array}{r} 43 \\ 276 \\ 60 \times \\ \hline 16560 \end{array}$$

6 tens \times 276 =
1656 tens or 16 560.



The VIA trains can carry 16 560 passengers in April.

Working Together

Complete the first statement. Then use it to help you complete the other multiplication statements.

1. $3 \times 112 = \boxed{}$

$3 \text{ tens} \times 112 = \boxed{} \text{ tens}$

$30 \times 112 = \boxed{}$

2. $7 \times 574 = \boxed{}$

$7 \text{ tens} \times 574 = \boxed{} \text{ tens}$

$70 \times 574 = \boxed{}$

3. $123 \times 123 = \boxed{}$

$\begin{array}{r} 123 \\ \times 123 \\ \hline \end{array}$

$\begin{array}{r} 123 \\ \times 123 \\ \hline \end{array}$

$\begin{array}{r} 123 \\ \times 123 \\ \hline \end{array}$

Write 0 in the ones place.

Then multiply by 4 (tens).

Multiply.

4. $\begin{array}{r} 121 \\ \times 40 \\ \hline 0 \end{array}$

5. $\begin{array}{r} 237 \\ \times 40 \\ \hline \end{array}$

6. $\begin{array}{r} 695 \\ \times 40 \\ \hline \end{array}$

7. $\begin{array}{r} 142 \\ \times 10 \\ \hline \end{array}$

8. $\begin{array}{r} 137 \\ \times 50 \\ \hline \end{array}$

9. $\begin{array}{r} 625 \\ \times 80 \\ \hline \end{array}$

Exercises

Multiply.

1. $\begin{array}{r} 364 \\ \times 20 \\ \hline \end{array}$

2. $\begin{array}{r} 481 \\ \times 90 \\ \hline \end{array}$

3. $\begin{array}{r} 274 \\ \times 50 \\ \hline \end{array}$

4. $\begin{array}{r} 193 \\ \times 70 \\ \hline \end{array}$

5. $\begin{array}{r} 822 \\ \times 80 \\ \hline \end{array}$

6. $\begin{array}{r} 232 \\ \times 60 \\ \hline \end{array}$

7. $\begin{array}{r} 876 \\ \times 40 \\ \hline \end{array}$

8. $\begin{array}{r} 953 \\ \times 10 \\ \hline \end{array}$

9. $\begin{array}{r} 247 \\ \times 80 \\ \hline \end{array}$

10. $\begin{array}{r} 966 \\ \times 50 \\ \hline \end{array}$

11. $\begin{array}{r} 744 \\ \times 40 \\ \hline \end{array}$

12. $\begin{array}{r} 396 \\ \times 80 \\ \hline \end{array}$

13. $\begin{array}{r} 658 \\ \times 30 \\ \hline \end{array}$

14. $\begin{array}{r} 276 \\ \times 90 \\ \hline \end{array}$

15. $\begin{array}{r} 549 \\ \times 50 \\ \hline \end{array}$

16. $\begin{array}{r} 825 \\ \times 30 \\ \hline \end{array}$

17. $\begin{array}{r} 567 \\ \times 60 \\ \hline \end{array}$

18. $\begin{array}{r} 448 \\ \times 70 \\ \hline \end{array}$

Write the product for the two numbers in each cloud.

19. $\begin{array}{r} 99 \\ \times 10 \\ \hline \end{array}$

20. $\begin{array}{r} 99 \\ \times 20 \\ \hline \end{array}$

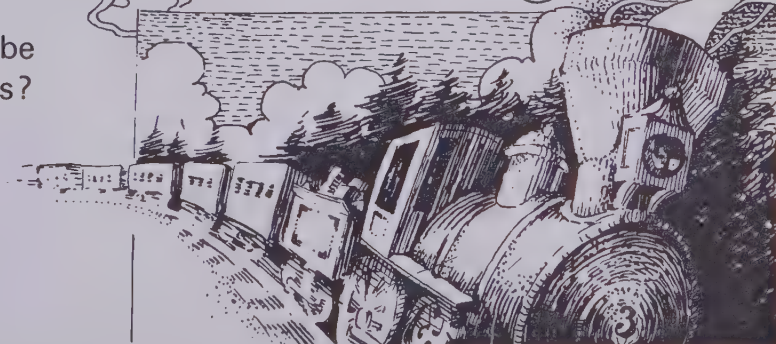
21. $\begin{array}{r} 99 \\ \times 30 \\ \hline \end{array}$

22. $\begin{array}{r} 99 \\ \times 40 \\ \hline \end{array}$

23. $\begin{array}{r} 99 \\ \times 50 \\ \hline \end{array}$

24. $\begin{array}{r} 99 \\ \times 60 \\ \hline \end{array}$

25. What will the products be for the next three clouds?



Multiplying Three-Digit Numbers by Two-Digit Numbers

If a double-decker travels 225 km around Victoria each day, how far would it travel in the 92 d of June, July, and August?

Multiply 92 and 225.

For the product

$$\begin{array}{r} 225 \\ \times 92 \\ \hline \end{array}$$

9 tens 2 ones

you need to know how to multiply 2 and 225.

$$\begin{array}{r} 1 \\ 225 \\ \times 2 \\ \hline 450 \end{array}$$

and how to multiply 9 and 225.

$$\begin{array}{r} 24 \\ \times \\ 225 \\ \times 92 \\ \hline 450 \end{array}$$

9 tens \times 225 =
2025 tens or 20 250.

Then add.

$$\begin{array}{r} 24 \\ \times \\ 225 \\ \times 92 \\ \hline 450 \\ 20250 \\ \hline 20700 \end{array}$$

The bus would travel 20 700 km in June, July, and August.



Working Together

Multiply by following the steps.

1.
$$\begin{array}{r} 873 \\ 15 \\ \hline \end{array}$$
- Multiply 5 and 873. \longrightarrow
- Write 0 in the ones place. \longrightarrow
- Then multiply 1 and 873. \longrightarrow
- Add. \longrightarrow
- $1 \text{ ten} \times 873 = 873 \text{ tens.}$

2.
$$\begin{array}{r} 279 \\ 45 \\ \hline \end{array}$$
- Multiply 5 and 279. \longrightarrow
- Write 0 in the ones place. \longrightarrow
- Then multiply 4 and 279. \longrightarrow
- Add. \longrightarrow
- $4 \text{ tens} \times 279 = 1116 \text{ tens.}$

Multiply.

3.
$$\begin{array}{r} 159 \\ 14 \\ \hline \end{array}$$
4.
$$\begin{array}{r} 209 \\ 32 \\ \hline \end{array}$$
5.
$$\begin{array}{r} 640 \\ 28 \\ \hline \end{array}$$
6.
$$\begin{array}{r} 700 \\ 52 \\ \hline \end{array}$$
7.
$$\begin{array}{r} 978 \\ 64 \\ \hline \end{array}$$

Exercises

Multiply.

1.
$$\begin{array}{r} 154 \\ 14 \\ \hline \end{array}$$
2.
$$\begin{array}{r} 226 \\ 32 \\ \hline \end{array}$$
3.
$$\begin{array}{r} 750 \\ 51 \\ \hline \end{array}$$
4.
$$\begin{array}{r} 282 \\ 26 \\ \hline \end{array}$$
5.
$$\begin{array}{r} 194 \\ 19 \\ \hline \end{array}$$
6.
$$\begin{array}{r} 617 \\ 82 \\ \hline \end{array}$$
7.
$$\begin{array}{r} 361 \\ 15 \\ \hline \end{array}$$
8.
$$\begin{array}{r} 276 \\ 87 \\ \hline \end{array}$$
9.
$$\begin{array}{r} 267 \\ 82 \\ \hline \end{array}$$
10.
$$\begin{array}{r} 362 \\ 55 \\ \hline \end{array}$$
11.
$$\begin{array}{r} 600 \\ 12 \\ \hline \end{array}$$
12.
$$\begin{array}{r} 762 \\ 44 \\ \hline \end{array}$$

Multiply like you multiply whole numbers.

Then write the result in dollars and cents.

Example:

$$\begin{array}{r} \\ \$5.13 \\ 28 \\ \hline 41 \text{ } 04 \leftarrow 8 \times 513 \\ 102 \text{ } 60 \leftarrow 2 \text{ tens} \times 513 \\ \hline \$143.64 \leftarrow \text{Write the result in} \\ \text{dollars and cents.} \end{array}$$

13.
$$\begin{array}{r} \$9.12 \\ 34 \\ \hline \end{array}$$
14.
$$\begin{array}{r} \$3.04 \\ 93 \\ \hline \end{array}$$
15.
$$\begin{array}{r} \$4.62 \\ 71 \\ \hline \end{array}$$
16.
$$\begin{array}{r} \$2.80 \\ 48 \\ \hline \end{array}$$
17.
$$\begin{array}{r} \$2.87 \\ 67 \\ \hline \end{array}$$
18.
$$\begin{array}{r} \$4.44 \\ 59 \\ \hline \end{array}$$

Practice

Multiply.

1. $\begin{array}{r} 177 \\ 14 \end{array}$

2. $\begin{array}{r} 298 \\ 27 \end{array}$

3. $\begin{array}{r} 691 \\ 33 \end{array}$

4. $\begin{array}{r} 272 \\ 73 \end{array}$

5. $\begin{array}{r} 314 \\ 26 \end{array}$

6. $\begin{array}{r} 218 \\ 66 \end{array}$

7. $\begin{array}{r} 321 \\ 44 \end{array}$

8. $\begin{array}{r} 346 \\ 53 \end{array}$

9. $\begin{array}{r} 442 \\ 94 \end{array}$

10. $\begin{array}{r} 651 \\ 19 \end{array}$

11. $\begin{array}{r} 381 \\ 64 \end{array}$

12. $\begin{array}{r} 188 \\ 72 \end{array}$

13. $\begin{array}{r} \$5.26 \\ 42 \end{array}$

14. $\begin{array}{r} \$3.17 \\ 16 \end{array}$

15. $\begin{array}{r} \$2.49 \\ 23 \end{array}$

16. $\begin{array}{r} \$9.66 \\ 53 \end{array}$

17. $\begin{array}{r} \$1.52 \\ 98 \end{array}$

18. $\begin{array}{r} \$2.37 \\ 61 \end{array}$

As you do these, see if you can find a quick way to multiply by 11.

19. $\begin{array}{r} 254 \\ 11 \end{array}$

20. $\begin{array}{r} 342 \\ 11 \end{array}$

21. $\begin{array}{r} 426 \\ 11 \end{array}$

22. $\begin{array}{r} 538 \\ 11 \end{array}$

23. $\begin{array}{r} 736 \\ 11 \end{array}$

24. $\begin{array}{r} 684 \\ 11 \end{array}$

What would the calculator show for each product?

25.

$\begin{array}{r} 477 \\ 77 \\ \hline \end{array}$

26.

$\begin{array}{r} 284 \\ 95 \\ \hline \end{array}$

Here is a way to check multiplication.

$\begin{array}{r} 137 \\ 23 \\ \hline 411 \\ 2740 \\ \hline 3151 \end{array}$
 $\begin{array}{l} 137 \rightarrow 1 + 3 + 7 \rightarrow 11 \rightarrow 1 + 1 \rightarrow 2 \\ 23 \rightarrow 2 + 3 \rightarrow 5 \\ 3151 \rightarrow 3 + 1 + 5 + 1 \rightarrow 10 \rightarrow 1 + 0 \rightarrow 1 \end{array}$

If the product of these two numbers does not equal one of the numbers in red, there is a mistake in your work.

**try
this**

Use this method to check Exercises 1–6 above.



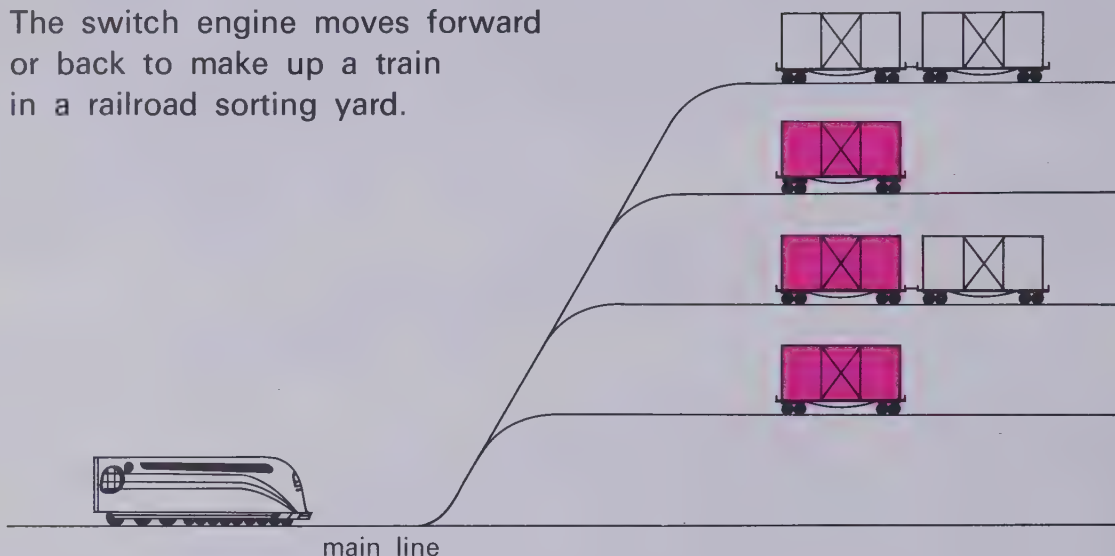
This DC-9 is one of 46 in the Air Canada fleet.

27. How many passengers could all the Air Canada DC-9's carry at one time?
28. The DC-9 can fly 865 km in an hour. How far can it fly in 3 h?
29. How many passengers could all the L-1011's carry at one time?
30. In February, 28 747's and 28 L-1011's fly from Vancouver to eastern Canada. How many passengers could these flights carry in all?
31. Which can carry more passengers, 12 727's or 6 L-1011's?

AIR CANADA JET FACTS*		
Type	Number	Seats
DC-8	27	205
DC-9	46	102
727	33	132
747	7	429
L-1011	12	244
*as of October, 1980.		

Logical Thinking

The switch engine moves forward or back to make up a train in a railroad sorting yard.

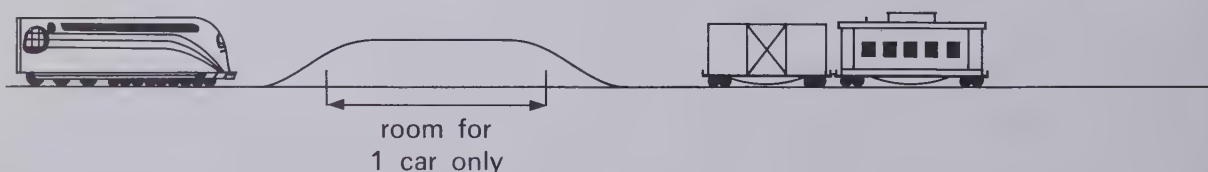


Count each move going forward as one move.
Count each move going back as one move.
How many moves are needed to get

1. 4 cars to the main line?
2. all the cars to the main line?
3. all the red cars and no white cars to the main line?
4. all the white cars and no red cars to the main line?
5. all the cars like this on the main line?



There is room for just 1 car on the siding.



6. How can the switch engine change places with the caboose?
7. Draw railroad tracks and make up a switching problem for a friend.

**PROBLEM
SOLVING**

Checking Up

Choose the best estimate for each product.

1.
$$\begin{array}{r} 198 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 120 \\ \times 1200 \\ \hline 12000 \end{array}$$

2.
$$\begin{array}{r} 81 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 40 \\ \times 400 \\ \hline 4000 \end{array}$$

3.
$$\begin{array}{r} 392 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 280 \\ \times 2100 \\ \hline 2800 \end{array}$$

4.
$$\begin{array}{r} 570 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 450 \\ \times 4500 \\ \hline 5400 \end{array}$$

Round the two-digit factors to the nearest ten.

Round the three-digit factors to the nearest hundred.

Then multiply to estimate each product.

5.
$$\begin{array}{r} 124 \\ \times 4 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 799 \\ \times 3 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 46 \\ \times 7 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 177 \\ \times 4 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 809 \\ \times 9 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 33 \\ \times 6 \\ \hline \end{array}$$

Multiply.

11. 4×21

12. 5×360

13. 6×265

14. 9×29

15. 7×455

16. 40×22

17. 30×96

18. 80×63

19. 20×89

20. 60×38

21.
$$\begin{array}{r} 133 \\ \times 50 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 854 \\ \times 70 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 515 \\ \times 90 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 606 \\ \times 80 \\ \hline \end{array}$$

25.
$$\begin{array}{r} 900 \\ \times 60 \\ \hline \end{array}$$

26.
$$\begin{array}{r} 288 \\ \times 20 \\ \hline \end{array}$$

27.
$$\begin{array}{r} 45 \\ \times 25 \\ \hline \end{array}$$

28.
$$\begin{array}{r} 36 \\ \times 17 \\ \hline \end{array}$$

29.
$$\begin{array}{r} 63 \\ \times 74 \\ \hline \end{array}$$

30.
$$\begin{array}{r} 96 \\ \times 35 \\ \hline \end{array}$$

31.
$$\begin{array}{r} 54 \\ \times 48 \\ \hline \end{array}$$

32.
$$\begin{array}{r} 20 \\ \times 56 \\ \hline \end{array}$$

33.
$$\begin{array}{r} 818 \\ \times 42 \\ \hline \end{array}$$

34.
$$\begin{array}{r} 974 \\ \times 16 \\ \hline \end{array}$$

35.
$$\begin{array}{r} 400 \\ \times 80 \\ \hline \end{array}$$

36.
$$\begin{array}{r} \$7.66 \\ \times 62 \\ \hline \end{array}$$

37.
$$\begin{array}{r} \$5.02 \\ \times 39 \\ \hline \end{array}$$

38.
$$\begin{array}{r} \$5.20 \\ \times 52 \\ \hline \end{array}$$

Solve.

39. 32 passengers ride in each bus.
How many ride in 16 buses?

40. 73 airplanes land each day.
How many land in 7 d?

41. A ferry can carry 54 cars.
How many cars can it
carry in 14 trips?

42. 375 passengers ride the train
each day. How many ride
the train in 28 d?

43. Tickets cost \$23 each.
How much do 18 tickets cost?

44. Some tickets cost \$8.75 each.
How much do 42 of these cost?

11 DIVISION

Using Multiplication to Divide

The teacher wanted the 24 plants placed in 4 rows with the same number in each row. How many would there be in each row?

Divide 24 by 4.

For $4 \overline{)24}$

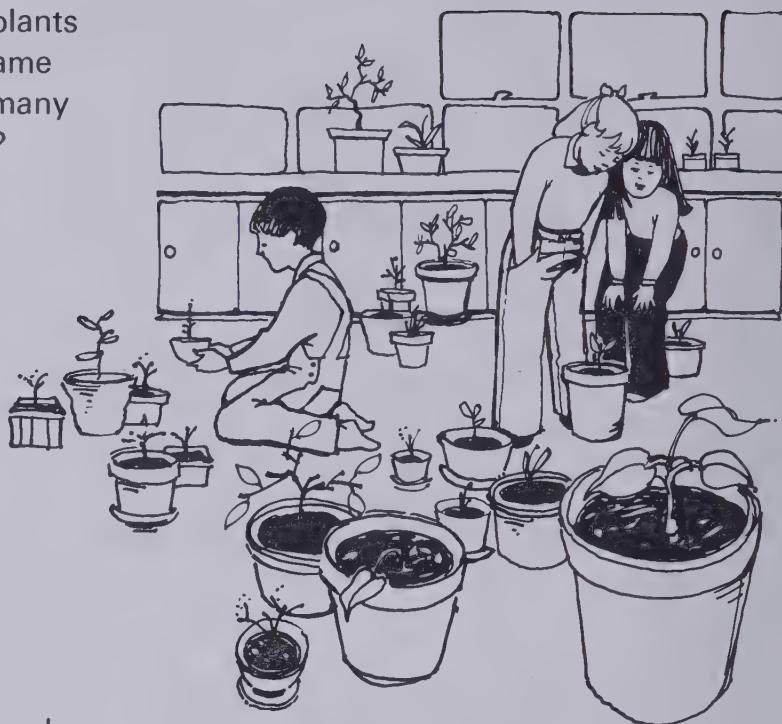
think

$$4 \times \begin{array}{c} \text{6} \\ \text{6} \\ \text{6} \\ \text{6} \end{array} = 24$$

$$4 \times 6 = 24$$

Write $4 \overline{)24}^6$

There would be 6 plants in each row.



Working Together

Complete these multiplication tables.

1.	×	1	2	3	4	5	6	7	8	9
	2									

2.	×	1	2	3	4	5	6	7	8	9
	3									

3.	×	1	2	3	4	5	6	7	8	9
	4									

4.	×	1	2	3	4	5	6	7	8	9
	5									

Which multiplication fact could be used to find the quotient?

5. $2 \overline{)16}$

6. $24 \div 3$

7. $28 \div 4$

8. $4 \overline{)27}$

$$4 \times 7 = 28$$

$$4 \times 6 = 24$$

$$2 \times 8 = 16$$

$$3 \times 8 = 24$$

Find the quotient. Give the multiplication fact you use.

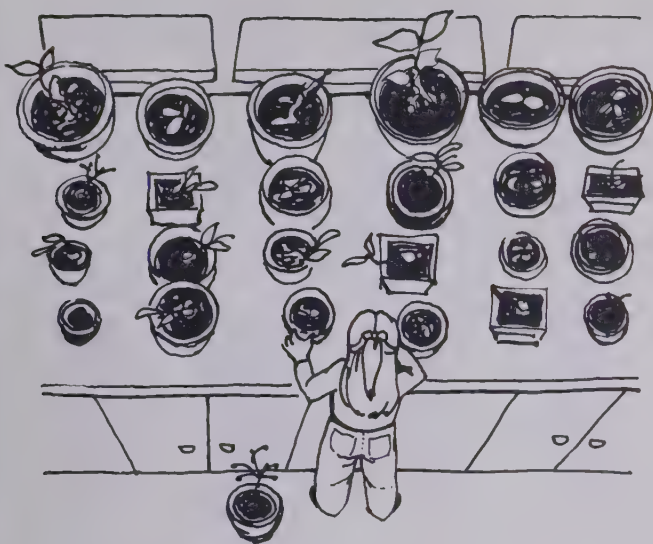
9. $3 \overline{)21}$

10. $35 \div 5$

Find the quotient and the remainder. Give the multiplication fact you use.

11. $3 \overline{)10}$

12. $5 \overline{)32}$



If there were 25 plants in the room, they could be placed in 4 rows of 6 with 1 plant left over.

$$\begin{array}{r} 6 \text{ R}1 \\ 4 \overline{)25} \\ \underline{24} \\ 1 \end{array}$$

In division, the number left over is the remainder.

Exercises

Complete this multiplication table.

1.

\times	1	2	3	4	5	6	7	8	9
6									
7									
8									
9									

Find the quotient. Write the multiplication fact you use.

2. $6 \overline{)24}$ 3. $7 \overline{)56}$ 4. $27 \div 9$

Find the quotient and the remainder. Write the multiplication fact you use.

5. $8 \overline{)74}$ 6. $59 \div 6$ 7. $8 \overline{)52}$

Show the quotient for each division.

8. $3 \overline{)18}$ 9. $8 \overline{)24}$ 10. $2 \overline{)14}$ 11. $9 \overline{)54}$ 12. $5 \overline{)25}$ 13. $7 \overline{)42}$
 14. $4 \overline{)12}$ 15. $9 \overline{)18}$ 16. $5 \overline{)45}$ 17. $7 \overline{)21}$ 18. $4 \overline{)32}$ 19. $8 \overline{)64}$
 20. $10 \div 5$ 21. $30 \div 6$ 22. $40 \div 5$ 23. $63 \div 7$ 24. $15 \div 3$ 25. $48 \div 6$

Show the quotient and the remainder.

26. $4 \overline{)33}$ 27. $8 \overline{)42}$ 28. $5 \overline{)17}$ 29. $9 \overline{)75}$ 30. $3 \overline{)29}$ 31. $6 \overline{)17}$
 32. $3 \overline{)11}$ 33. $7 \overline{)50}$ 34. $9 \overline{)50}$ 35. $8 \overline{)22}$ 36. $6 \overline{)41}$ 37. $7 \overline{)32}$

Choose three of the four numbers and write a division fact.

38. 7, 9, 36, 63 39. 36, 6, 4, 9 40. 56, 54, 6, 9 41. 42, 13, 6, 7
 42. 7, 35, 28, 5 43. 18, 9, 9, 2 44. 54, 8, 7, 56 45. 9, 8, 81, 9

Sharing Tens

Divide 80 by 4.

For $4 \overline{)80}$,

share 80, or 8 tens, among 4 groups.

Think

$$4 \times 2 = 8$$

$$4 \times 2 \text{ tens} = 8 \text{ tens}$$

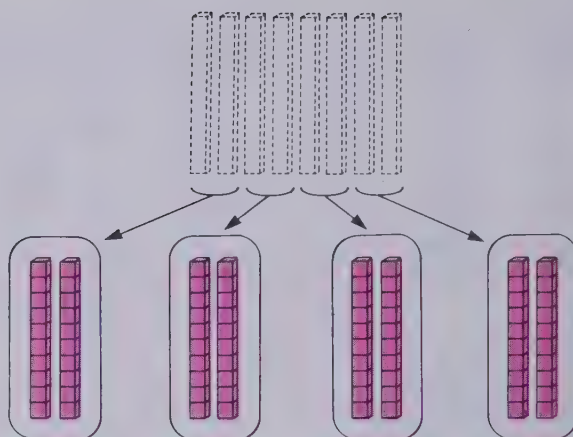
$$4 \times 20 = 80$$

20

Write

$$4 \overline{)80}$$

When 80 is divided by 4,
the quotient is 20.



Working Together

How many tens?

1. 60 2. 70 3. 90

Divide.

4. $2 \overline{)60}$ 5. $7 \overline{)70}$ 6. $3 \overline{)90}$

Exercises

Divide.

1. $3 \overline{)60}$ 2. $5 \overline{)50}$ 3. $8 \overline{)80}$
 4. $4 \overline{)80}$ 5. $2 \overline{)60}$ 6. $3 \overline{)90}$
 7. $2 \overline{)40}$ 8. $3 \overline{)30}$ 9. $2 \overline{)80}$

Solve.

10. Earl spent 40¢ for 4 oranges. How much did each orange cost?
 11. Jackie has 3 shelves for her 60 books. She wants to put the same number on each shelf. How many books should she put on each shelf?

2 and 3 are prime numbers.

$$2 \times 3 = 6$$

2 and 3 are **prime factors** of 6.

6 and 5 are factors of 30.

6 is not a prime factor of 30 because 6 is not a prime number.

2, 3, and 5 are the prime factors of 30. $6 \times 5 = 30$
 $2 \times 3 \times 5 = 30$

List the prime factors for each of these.

1. 10 2. 14 3. 21
 4. 15 5. 35 6. 42
 7. 12 8. 18 9. 63

**try
this**

Sharing Tens and Ones

Divide 96 by 3.

96 equals 9 tens 6 ones.

For $3 \overline{)96}$, share the 9 tens first.

Think

$$3 \times 3 = 9$$

$$3 \times 3 \text{ tens} = 9 \text{ tens}$$

$$3 \times 30 = 90$$

Write

$$\begin{array}{r} 30 \\ 3 \overline{)96} \\ \underline{90} \end{array}$$

6 still to share

Then, share the 6 ones.

Think

$$3 \times 2 = 6$$

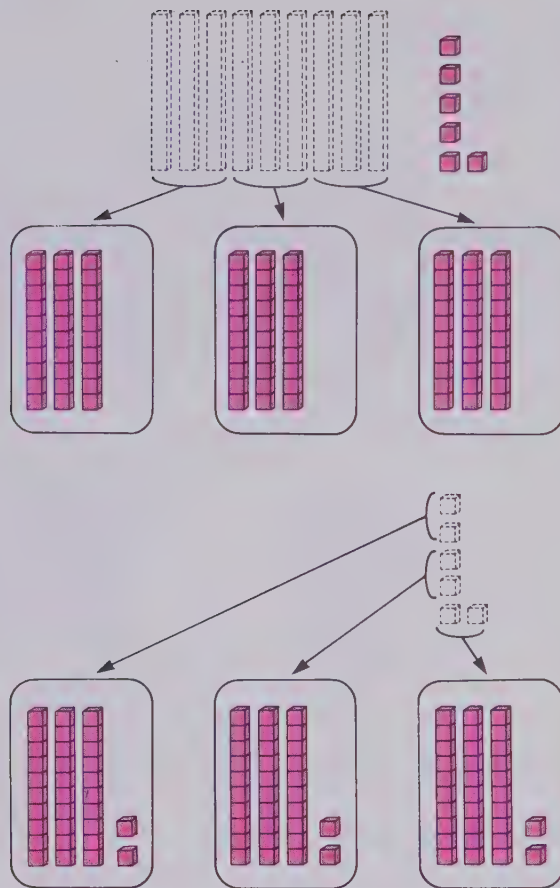
Write

$$\begin{array}{r} 2 \\ 30 \\ 3 \overline{)96} \\ \underline{90} \\ 6 \\ \underline{6} \\ 0 \end{array}$$

Add for the quotient.

$$\begin{array}{r} 2 \\ 30 \\ 3 \overline{)96} \\ \underline{90} \\ 6 \\ \underline{6} \\ 0 \end{array} \rightarrow 32$$

When 96 is divided by 3, the quotient is 32.



Working Together

How many tens? How many ones?

1. 48

2. 66

3. 80

Divide.

4. $2 \overline{)48}$

5. $6 \overline{)66}$

6. $4 \overline{)80}$

Exercises

Divide.

1. $2 \overline{)62}$

2. $3 \overline{)69}$

3. $2 \overline{)24}$

4. $4 \overline{)88}$

5. $7 \overline{)77}$

6. $4 \overline{)40}$

7. $3 \overline{)36}$

8. $2 \overline{)86}$

9. $3 \overline{)93}$

Sharing Hundreds, Tens, and Ones

Divide 468 by 2.

468 equals 4 hundreds 6 tens 8 ones.

For $2 \overline{)468}$, share the 4 hundreds first.

Think

$$2 \times 2 = 4$$

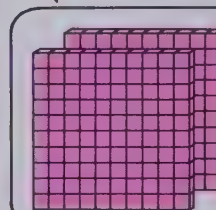
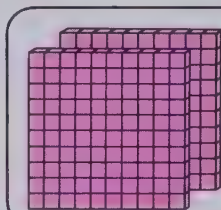
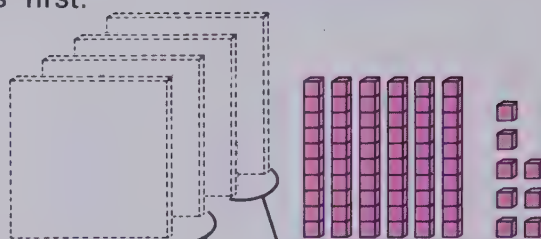
$$2 \times 2 \text{ hundreds} = 4 \text{ hundreds}$$

$$2 \times 200 = 400$$

Write

$$\begin{array}{r} 200 \\ 2 \overline{)468} \\ \underline{400} \end{array}$$

68 "still to share"



Next, share the 6 tens.

Think

$$2 \times 3 = 6$$

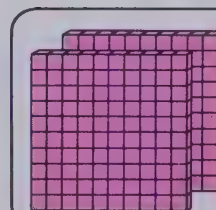
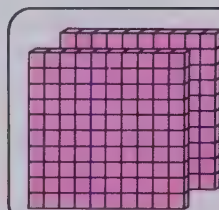
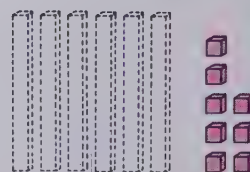
$$2 \times 3 \text{ tens} = 6 \text{ tens}$$

$$2 \times 30 = 60$$

Write

$$\begin{array}{r} 30 \\ 200 \\ 2 \overline{)468} \\ \underline{400} \\ 68 \\ \underline{60} \end{array}$$

8 "still to share"



Then, share the 8 ones.

Think

4

$$2 \times 4 = 8$$

30

200

Write

2) 468

400

68

60

8

8

0

Add for the quotient.

4

30

200

234

2) 468

400

68

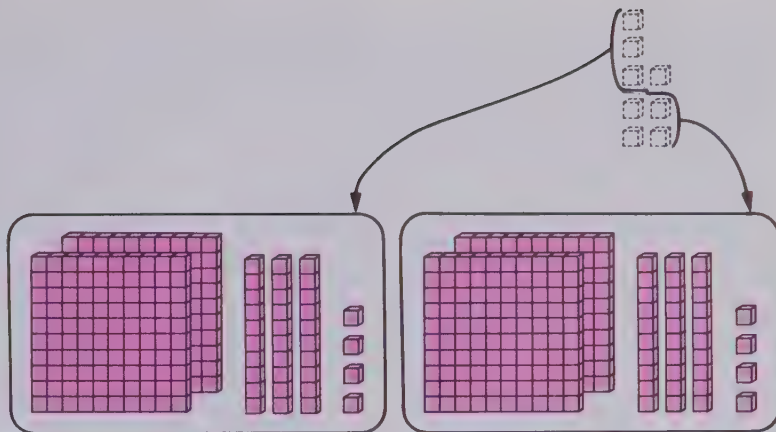
60

8

8

0

When 468 is divided by 2,
the quotient is 234.



Working Together

How many hundreds? How many tens?

How many ones?

1. 862

2. 550

3. 903

Divide.

4. $2 \overline{)862}$

5. $5 \overline{)550}$

6. $3 \overline{)903}$

Exercises

Divide.

1. $3 \overline{)639}$

2. $6 \overline{)660}$

3. $2 \overline{)486}$

4. $4 \overline{)408}$

5. $4 \overline{)840}$

6. $8 \overline{)800}$

7. $3 \overline{)360}$

8. $4 \overline{)448}$

9. $2 \overline{)240}$

10. $5 \overline{)505}$

11. $2 \overline{)644}$

12. $3 \overline{)300}$

13. $3 \overline{)936}$

14. $2 \overline{)666}$

15. $3 \overline{)609}$

16. $4 \overline{)884}$

17. $9 \overline{)909}$

18. $2 \overline{)826}$

19. $4 \overline{)488}$

20. $3 \overline{)693}$

Alistair and Brenda had each earned a penny when Clarissa joined them. The three of them then earned two dimes, one nickel, and two pennies more.

- How could Alistair, Brenda, and Clarissa share the two dimes, one nickel, and two pennies fairly?



PROBLEM SOLVING

Regrouping Tens

Divide 72 by 3.

72 equals 7 tens 2 ones.

For $3 \overline{)72}$, share the 7 tens first.

Think

$3 \times 2 = 6$, $3 \times 3 = 9$...too many!

3×2 tens = 6 tens

$3 \times 20 = 60$

Write

$$\begin{array}{r} 20 \\ 3 \overline{)72} \\ \underline{60} \\ 12 \end{array}$$

still to share

Regroup the 1 ten 2 ones that remain as 12 ones.

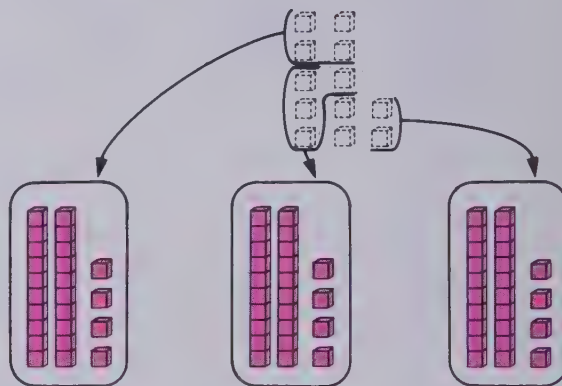
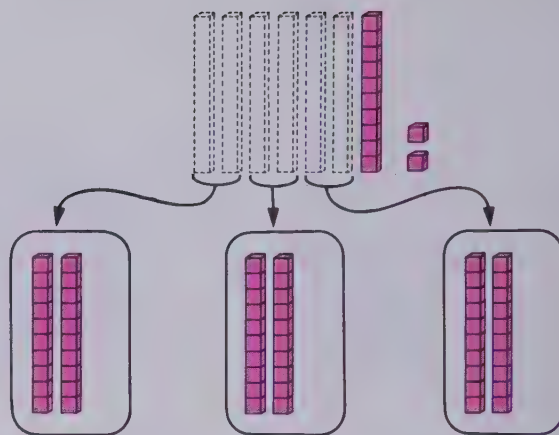
Then share the 12 ones.

Think

$3 \times 4 = 12$

Write

$$\begin{array}{r} 4 \\ 20 \\ 3 \overline{)72} \\ \underline{60} \\ 12 \\ \underline{12} \\ 0 \end{array}$$



Add for the quotient.

$$\begin{array}{r} 4 \\ 20 \\ 3 \overline{)72} \\ \underline{60} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

24

When 72 is divided by 3, the quotient is 24.

QUICK QUIZ

A.
$$\begin{array}{r} 2 \overline{)10} \overline{)12} \\ 4 \overline{)68} \\ \underline{60} \\ 8 \\ \underline{8} \\ 0 \end{array}$$

B.
$$\begin{array}{r} 8 \overline{)10} \overline{)18} \\ 3 \overline{)54} \\ \underline{30} \\ 24 \\ \underline{24} \\ 0 \end{array}$$

C.
$$\begin{array}{r} 8 \overline{)20} \overline{)28} \\ 2 \overline{)56} \\ \underline{20} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

Can you find any mistakes?

Exercises

The teacher handed out this Quick Quiz.

1. In the quiz, one of the quotients is not correct. Which one? What is the correct quotient?
2. The other quotients are correct, but there still is a mistake in the work. What other division shows a mistake? Write the division correctly.

Working Together

Give the first multiplication fact you can use to find the quotient.

Example: For $4 \overline{)96}$, use

$$4 \times 2 = 8,$$

$4 \times 2 \text{ tens} = 8 \text{ tens},$

or $4 \times 20 = 80.$

1. $3 \overline{)78}$ 2. $4 \overline{)52}$ 3. $2 \overline{)70}$

Complete.

4.
$$\begin{array}{r} \overline{)10} \overline{)65} \\ \underline{50} \\ 15 \\ \underline{15} \\ 0 \end{array}$$

5.
$$\begin{array}{r} \overline{)74} \\ \underline{60} \\ 14 \\ \underline{14} \\ 0 \end{array}$$

Divide.

6. $3 \overline{)75}$ 7. $5 \overline{)80}$ 8. $2 \overline{)94}$

Divide.

3. $2 \overline{)32}$ 4. $6 \overline{)78}$ 5. $3 \overline{)81}$
 6. $4 \overline{)60}$ 7. $5 \overline{)75}$ 8. $2 \overline{)54}$
 9. $5 \overline{)85}$ 10. $2 \overline{)38}$ 11. $4 \overline{)92}$
 12. $7 \overline{)91}$ 13. $2 \overline{)90}$ 14. $3 \overline{)84}$
 15. $8 \overline{)96}$ 16. $5 \overline{)90}$ 17. $2 \overline{)78}$
 18. $2 \overline{)58}$ 19. $3 \overline{)48}$ 20. $5 \overline{)70}$
 21. $6 \overline{)72}$ 22. $4 \overline{)76}$ 23. $3 \overline{)57}$

Practice

It's Saturday. The boys are holding a backyard carnival for their friends.

1. John sold 9 tickets to Moira for 45¢. How much did each ticket cost?
2. 4 children each bought the same number of tickets from John. They bought 72 tickets in all. How many tickets did each buy?
3. Each ticket costs 5¢. Lisa spent 75¢ for tickets. How many tickets did she buy?



The Great All-Seeing Swami challenges you to pick a path, follow it correctly, and find your fortune. Use tracing paper and make no diagonal moves please.

Follow a path showing quotients greater than 15.

Follow a path showing quotients less than 18.

Follow the quotients that are 10 or 20 or a number in between.

$4 \overline{)80}$			$3 \overline{)21}$			$6 \overline{)72}$
$2 \overline{)66}$	$6 \overline{)96}$	$5 \overline{)90}$	$5 \overline{)65}$	$6 \overline{)90}$	$4 \overline{)92}$	$5 \overline{)85}$
$7 \overline{)77}$	$3 \overline{)39}$	$3 \overline{)57}$	$3 \overline{)60}$	$8 \overline{)80}$	$7 \overline{)42}$	$2 \overline{)40}$
$4 \overline{)36}$	$2 \overline{)32}$	$5 \overline{)80}$	$9 \overline{)81}$	$2 \overline{)34}$	$4 \overline{)72}$	$4 \overline{)64}$
$4 \overline{)68}$	$5 \overline{)95}$	$2 \overline{)38}$	$3 \overline{)54}$	$3 \overline{)90}$	$8 \overline{)56}$	$7 \overline{)91}$
$8 \overline{)88}$	$3 \overline{)48}$	$7 \overline{)98}$	$4 \overline{)76}$	$6 \overline{)48}$	$3 \overline{)51}$	$2 \overline{)42}$
$3 \overline{)45}$	YOUR FORTUNE Today, you will do nothing right!			YOUR FORTUNE Today, you will do everything right!		
					$2 \overline{)36}$	



You get 3 throws for a ticket in this game.

4. Alexander had 36 throws.
How many tickets did he use for this game?
- *6. Each ticket costs 5¢.
How many throws do you get for 65¢ worth of tickets?
5. 4 girls shared 60 throws equally in this game. How many throws did each get?
- *7. Each ticket costs 5¢. Sean and Dawn spent 40¢ worth of tickets in this game. Each took the same number of throws. How many throws did each take?

Divide.

- | | | | | | |
|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 8. $2 \overline{)76}$ | 9. $6 \overline{)42}$ | 10. $4 \overline{)56}$ | 11. $3 \overline{)63}$ | 12. $7 \overline{)84}$ | 13. $4 \overline{)40}$ |
| 14. $5 \overline{)55}$ | 15. $9 \overline{)72}$ | 16. $2 \overline{)96}$ | 17. $4 \overline{)52}$ | 18. $3 \overline{)69}$ | 19. $6 \overline{)84}$ |
| 20. $3 \overline{)42}$ | 21. $5 \overline{)50}$ | 22. $4 \overline{)48}$ | 23. $5 \overline{)70}$ | 24. $2 \overline{)86}$ | 25. $4 \overline{)24}$ |
| 26. $8 \overline{)96}$ | 27. $4 \overline{)88}$ | 28. $2 \overline{)80}$ | 29. $9 \overline{)99}$ | 30. $3 \overline{)72}$ | 31. $2 \overline{)70}$ |
| 32. $3 \overline{)36}$ | 33. $4 \overline{)84}$ | 34. $3 \overline{)96}$ | 35. $2 \overline{)58}$ | 36. $6 \overline{)54}$ | 37. $3 \overline{)87}$ |
| 38. $4 \overline{)96}$ | 39. $2 \overline{)98}$ | 40. $8 \overline{)72}$ | 41. $3 \overline{)81}$ | 42. $2 \overline{)82}$ | 43. $3 \overline{)75}$ |
| 44. $9 \overline{)90}$ | 45. $3 \overline{)78}$ | 46. $2 \overline{)54}$ | 47. $5 \overline{)60}$ | 48. $3 \overline{)84}$ | 49. $2 \overline{)92}$ |

Sharing Hundreds, Regrouping Tens

The students sold 864 tickets for the 4 nights of their variety show. They expected the same number of tickets to be used each night. How many would that be?

Divide 864 by 4.

864 equals 8 hundreds 6 tens 4 ones.

Think of the model for 864.

For $4 \overline{)864}$, share the 8 hundreds first.

Think

$$4 \times 2 = 8$$

$$4 \times 2 \text{ hundreds} = 8 \text{ hundreds}$$

$$4 \times 200 = 800$$

Write

$$\begin{array}{r} 200 \\ 4 \overline{)864} \\ \underline{800} \\ 64 \end{array}$$

still to share

Next, share the 6 tens.

Think

$$4 \times 1 = 4, \quad 4 \times 2 = 8 \dots \text{too many!}$$

$$4 \times 1 \text{ ten} = 4 \text{ tens}$$

$$4 \times 10 = 40$$

Write

$$\begin{array}{r} 10 \\ 200 \\ 4 \overline{)864} \\ \underline{800} \\ 64 \\ \underline{40} \\ 24 \end{array}$$

still to share

Regroup the 2 tens 4 ones that remain as 24 ones. Then share the 24 ones.

Think

$$4 \times 6 = 24$$

Write

$$\begin{array}{r} 6 \\ 10 \\ 200 \\ 4 \overline{)864} \\ \underline{800} \\ 64 \\ \underline{40} \\ 24 \\ \underline{24} \\ 0 \end{array}$$

Then add for the quotient.

$$\begin{array}{r} 6 \\ 10 \\ 200 \\ 4 \overline{)864} \\ \underline{800} \\ 64 \\ \underline{40} \\ 24 \\ \underline{24} \\ 0 \end{array} \rightarrow 216$$

They expected 216 tickets to be used each night.



Exercises

Divide.

1. $2 \overline{)436}$ 2. $3 \overline{)975}$ 3. $4 \overline{)868}$
4. $3 \overline{)615}$ 5. $5 \overline{)585}$ 6. $2 \overline{)612}$
7. $3 \overline{)342}$ 8. $2 \overline{)694}$ 9. $3 \overline{)924}$
10. $2 \overline{)876}$ 11. $7 \overline{)749}$ 12. $2 \overline{)452}$
13. $3 \overline{)687}$ 14. $4 \overline{)432}$ 15. $2 \overline{)870}$

Solve.

16. 216 chairs were set up in 2 sections for the variety show. The same number of chairs were in each section. How many chairs were in each section?
17. The Activities Fund made \$496 from the 4 shows. If the shows earned equal amounts, how much did the Fund make each night?

Subtract.

- | | | |
|---|---|---|
| 1. $\begin{array}{r} 767 \\ 632 \\ \hline \end{array}$ | 2. $\begin{array}{r} 6984 \\ 4030 \\ \hline \end{array}$ | 3. $\begin{array}{r} \$1738 \\ 314 \\ \hline \end{array}$ |
| 4. $\begin{array}{r} 386 \\ 248 \\ \hline \end{array}$ | 5. $\begin{array}{r} 1364 \\ 723 \\ \hline \end{array}$ | 6. $\begin{array}{r} \$429 \\ 352 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 8254 \\ 5825 \\ \hline \end{array}$ | 8. $\begin{array}{r} 630 \\ 333 \\ \hline \end{array}$ | 9. $\begin{array}{r} \$2606 \\ 1971 \\ \hline \end{array}$ |
| 10. $\begin{array}{r} 5914 \\ 1946 \\ \hline \end{array}$ | 11. $\begin{array}{r} 6622 \\ 2769 \\ \hline \end{array}$ | 12. $\begin{array}{r} \$3126 \\ 177 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 3000 \\ 965 \\ \hline \end{array}$ | 14. $\begin{array}{r} 900 \\ 558 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$3003 \\ 1178 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 303 \\ 286 \\ \hline \end{array}$ | 17. $\begin{array}{r} 6035 \\ 4348 \\ \hline \end{array}$ | 18. $\begin{array}{r} \$4306 \\ 649 \\ \hline \end{array}$ |

Use $>$, $<$, or $=$

to make true statements.

19. $328 + 823 \bigcirc 823 + 328$
20. $963 - 369 \bigcirc 936 - 396$
21. $234 + 567 \bigcirc 987 - 123$
22. $1402 - 899 \bigcirc 402 + 128$
23. $\$309 + \$949 \bigcirc \$1567 - \309
24. $3206 - 1957 \bigcirc 2206 - 957$
25. $1338 - 446 \bigcirc 446 + 446$
26. $2468 + 1357 \bigcirc 1234 + 5678$
27. $555 + 777 \bigcirc 2222 - 999$
28. $\$1000 - \$333 \bigcirc \$333 + \333
29. $6314 - 3641 \bigcirc 4136 - 1364$
30. $4638 + 2785 \bigcirc 2688 + 4735$
31. $2222 - 888 \bigcirc 666 + 666$
32. $978 + 896 \bigcirc 1875$

**KEEPING
SHARP**

Regrouping Hundreds

276 children were placed in 3 groups for school sports. The groups were equal in size. How many children were in each group?

Divide 276 by 3.

Think of the model for 276.

276 equals 2 hundreds 7 tens 6 ones.

For $3 \overline{)276}$, share the 2 hundreds first.

How can we share
2 hundreds among 3?

The easiest way to share 2 hundreds is by regrouping 2 hundreds 7 tens as 27 tens. Then share the 27 tens.

Think

$$3 \times 9 = 27$$

$$3 \times 9 \text{ tens} = 27 \text{ tens}$$

$$3 \times 90 = 270$$

Write

$$\begin{array}{r} 90 \\ 3 \overline{)276} \\ \underline{270} \\ 6 \end{array}$$

still to share

Next, share the 6 ones.

Think

$$3 \times 2 = 6$$

Write

$$\begin{array}{r} 2 \\ 90 \\ 3 \overline{)276} \\ \underline{270} \\ 6 \\ \underline{6} \\ 0 \end{array}$$

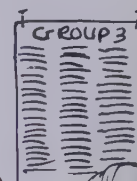
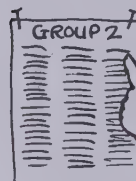
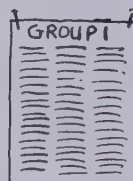
Then add
for the
quotient.

$$\begin{array}{r} 2 \\ 90 \\ 3 \overline{)276} \\ \underline{270} \\ 6 \\ \underline{6} \\ 0 \end{array} \rightarrow 92$$

Each group had 92 children.

SPORTS

TEAMS



Working Together

Complete.

- 248 equals $\begin{array}{|c|c|c|} \hline 2 & 4 & 8 \\ \hline \end{array}$ hundreds $\begin{array}{|c|c|c|} \hline 4 & & 8 \\ \hline \end{array}$ tens 8 ones
or $\begin{array}{|c|c|c|} \hline 2 & 4 & 8 \\ \hline \end{array}$ tens 8 ones.
- 320 equals $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ hundreds $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ tens
or $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ tens.
- For $8 \overline{)248}$, share $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ tens first.
- 159 equals $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ hundred $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ tens 9 ones
or $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ tens 9 ones.
- 405 equals $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ hundreds 5 ones
or $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ tens 5 ones.
- For $3 \overline{)159}$, share $\begin{array}{|c|c|c|} \hline & & \\ \hline \end{array}$ tens first.

Divide.

- $8 \overline{)248}$
- $3 \overline{)159}$
- $4 \overline{)320}$
- $5 \overline{)405}$

Exercises

Divide.

- $3 \overline{)189}$
- $5 \overline{)155}$
- $4 \overline{)160}$
- $2 \overline{)148}$
- $9 \overline{)540}$
- $4 \overline{)208}$
- $7 \overline{)497}$
- $6 \overline{)420}$
- $3 \overline{)273}$
- $5 \overline{)100}$
- $8 \overline{)560}$
- $6 \overline{)546}$

Which of these are Magic Squares?

13.

$2 \overline{)162}$	$9 \overline{)99}$	$4 \overline{)244}$
$7 \overline{)217}$	$5 \overline{)255}$	$3 \overline{)213}$
$6 \overline{)246}$	$1 \overline{)91}$	$8 \overline{)168}$

14.

$4 \overline{)248}$	$5 \overline{)205}$	$6 \overline{)486}$
$9 \overline{)729}$	$7 \overline{)427}$	$3 \overline{)126}$
$9 \overline{)369}$	$3 \overline{)246}$	$8 \overline{)488}$

15.

$5 \overline{)305}$	$9 \overline{)639}$	$3 \overline{)39}$	$4 \overline{)432}$
$6 \overline{)642}$	$2 \overline{)46}$	$4 \overline{)288}$	$8 \overline{)408}$
$2 \overline{)126}$	$7 \overline{)357}$	$8 \overline{)856}$	$4 \overline{)128}$
$4 \overline{)88}$	$7 \overline{)756}$	$6 \overline{)366}$	$3 \overline{)186}$

In a Magic Square,
the *sums* for the rows,
columns, and diagonals
are all the same.

Regrouping Hundreds, Regrouping Tens

746 books are to be shared equally among 3 classrooms.
How many books will each classroom get?

Divide 746 by 3.

Think of the model for 746.

746 equals 7 hundreds 4 tens 6 ones.

For $3 \overline{)746}$, share the 7 hundreds first.

Think $3 \times 2 = 6$, $3 \times 3 = 9$...too many!
 3×2 hundreds = 6 hundreds
 $3 \times 200 = 600$

Write $\begin{array}{r} 200 \\ 3 \overline{)746} \\ \underline{600} \\ 146 \end{array}$ still to share

Regroup the 1 hundred 4 tens that remain
as 14 tens. Then share the 14 tens.

Think $3 \times 4 = 12$, $3 \times 5 = 15$...too many!
 3×4 tens = 12 tens
 $3 \times 40 = 120$

Write $\begin{array}{r} 40 \\ 200 \\ 3 \overline{)746} \\ \underline{600} \\ 146 \\ \underline{120} \\ 26 \end{array}$ still to share

Regroup the 2 tens 6 ones that remain
as 26 ones. Then share the 26 ones.

Think $3 \times 8 = 24$, $3 \times 9 = 27$...too many!

Write $\begin{array}{r} 8 \\ 40 \\ 200 \\ 3 \overline{)746} \\ \underline{600} \\ 146 \\ \underline{120} \\ 26 \\ \underline{24} \\ 2 \end{array}$ remainder

Then add.
Write the
remainder
beside the
quotient when
the remainder
is not 0.

$\begin{array}{r} 8 \\ 40 \\ 200 \end{array} \rightarrow 248 \text{ R}2$
 $\begin{array}{r} 3 \overline{)746} \\ \underline{600} \\ 146 \\ \underline{120} \\ 26 \\ \underline{24} \\ 2 \end{array}$

Each classroom will get 248 books.
There will be 2 books left over.

Working Together

Give the first multiplication fact that can be used to find the quotient.

Example: For $2\overline{)734}$, use $\boxed{2 \times 3 = 6}$,
 2×3 hundreds = 6 hundreds, or $2 \times 300 = 600$

1. $4\overline{)948}$ 2. $7\overline{)483}$ 3. $3\overline{)806}$

Complete.

4. $4\overline{)948}$

$$\begin{array}{r} 800 \leftarrow 4 \times \text{[dots]} \\ \underline{148} \\ 120 \leftarrow 4 \times \text{[dots]} \\ \underline{28} \\ 28 \leftarrow 4 \times \text{[dots]} \\ \underline{0} \end{array}$$

Divide. Write the remainder beside the quotient when the remainder is not 0.

5. $2\overline{)718}$
 6. $7\overline{)483}$
 7. $3\overline{)806}$
 8. $6\overline{)230}$



Exercises

Divide.

1. $3\overline{)876}$ 2. $6\overline{)834}$ 3. $5\overline{)920}$ 4. $2\overline{)672}$ 5. $7\overline{)329}$ 6. $4\overline{)763}$
 7. $6\overline{)792}$ 8. $2\overline{)471}$ 9. $3\overline{)711}$ 10. $5\overline{)240}$ 11. $4\overline{)776}$ 12. $6\overline{)533}$
 13. $9\overline{)404}$ 14. $7\overline{)605}$ 15. $8\overline{)992}$ 16. $4\overline{)504}$ 17. $8\overline{)535}$ 18. $7\overline{)994}$

When the remainder is 0, you can use multiplication to check your division.

1. Use multiplication to check your division in Exercises 1–3 above.

Example: For $3\overline{)744}$, multiply 3 and 248 to check.

$$\begin{array}{r} 248 \\ 3 \\ \hline \end{array}$$

If the product is not 744, there is a mistake in your work.

**try
this**

Finding an Average

\$822 was spent on 6 field trips.

What was the **average cost** of each trip?

Divide \$822 by 6.

$$\begin{array}{r} 7 \\ 30 \rightarrow \$137 \\ 100 \\ 6 \overline{) \$822} \\ \underline{600} \\ 222 \\ \underline{180} \\ 42 \\ \underline{42} \\ 0 \end{array}$$

If an amount is thought of as being shared equally, the result is an **average amount**.

The average cost of each field trip was \$137.

Exercises

Divide to find an average for each of these.

1. 132 students went on the 6 field trips.
2. 150 tags were placed in 6 envelopes.
3. The school spent \$375 on 5 movie films.
4. John paid 92¢ for 4 pencils.
5. Candy earned \$56 in 8 weeks on her paper route.
6. 259 children rode on 7 buses.
7. 980 cartons of milk were drunk in 5 school days.
8. Sharon had one week to collect 35 insects.
- *9. There were 700 beads in 3 bags.
- *10. The 8 clubs had 318 members.

Divide.

11. $4 \overline{) 780}$ 12. $3 \overline{) \$801}$ 13. $9 \overline{) 891}$ 14. $5 \overline{) 530}$ 15. $8 \overline{) \$608}$ 16. $7 \overline{) 336}$
17. $6 \overline{) 760}$ 18. $5 \overline{) 486}$ 19. $9 \overline{) 700}$ 20. $3 \overline{) 710}$ 21. $8 \overline{) 805}$ 22. $7 \overline{) 622}$

- *23. Multiply the quotient by the divisor in each of the Exercises 11–16. The product should equal the number that was divided. If they are not equal, there is a mistake in your work.
- *24. Multiply the quotient by the divisor in Exercise 17. Then add the remainder to the product. Your result should equal the number that was divided. If not, there is a mistake in your work.



Add.

1. $\begin{array}{r} 2.2 \\ 6.2 \\ \hline \end{array}$	2. $\begin{array}{r} 3.03 \\ 1.62 \\ \hline \end{array}$	3. $\begin{array}{r} \$2.81 \\ 1.74 \\ \hline \end{array}$	4. $\begin{array}{r} 13.9 \\ 5.7 \\ \hline \end{array}$	5. $\begin{array}{r} 6.4 \\ 8.8 \\ \hline \end{array}$	6. $\begin{array}{r} 22.56 \\ 4.76 \\ \hline \end{array}$
--	--	--	---	--	---

7. $\begin{array}{r} \$3.69 \\ 8.54 \\ \hline \end{array}$	8. $\begin{array}{r} 58.7 \\ 23.5 \\ \hline \end{array}$	9. $\begin{array}{r} 19.55 \\ 25.89 \\ \hline \end{array}$	10. $\begin{array}{r} \$2.80 \\ 9.81 \\ \hline \end{array}$	11. $\begin{array}{r} 0.7 \\ 7.3 \\ \hline \end{array}$	12. $\begin{array}{r} 6.14 \\ 7.59 \\ \hline \end{array}$
--	--	--	---	---	---

Subtract.

13. $\begin{array}{r} 7.67 \\ 3.42 \\ \hline \end{array}$	14. $\begin{array}{r} 8.9 \\ 0.4 \\ \hline \end{array}$	15. $\begin{array}{r} \$8.04 \\ 4.21 \\ \hline \end{array}$	16. $\begin{array}{r} 56.4 \\ 4.8 \\ \hline \end{array}$	17. $\begin{array}{r} 52.49 \\ 44.72 \\ \hline \end{array}$	18. $\begin{array}{r} \$8.00 \\ 1.55 \\ \hline \end{array}$
---	---	---	--	---	---

19. $\begin{array}{r} 7.3 \\ 3.7 \\ \hline \end{array}$	20. $\begin{array}{r} 30.80 \\ 3.96 \\ \hline \end{array}$	21. $\begin{array}{r} 64.2 \\ 28.9 \\ \hline \end{array}$	22. $\begin{array}{r} \$9.05 \\ 4.26 \\ \hline \end{array}$	23. $\begin{array}{r} 70.00 \\ 61.98 \\ \hline \end{array}$	24. $\begin{array}{r} 4.1 \\ 0.5 \\ \hline \end{array}$
---	--	---	---	---	---

Use $>$, $<$, or $=$ to make true statements.

25. $3.7 + 3.9 \bigcirc 15.1 - 7.6$

26. $10.00 - 6.38 \bigcirc 9.99 - 6.37$

27. $\$6.68 + \$5.98 \bigcirc \$10.00 + \2.76

28. $\$2.60 - \$1.84 \bigcirc \$0.09 + \0.58

**KEEPING
SHARP**

A Shorter Form for Division

Some students discovered a shorter form for dividing.

Divide 514 by 8.

514 equals 5 hundreds 1 ten 4 ones.

For $8 \overline{)514}$, the easiest way to share 5 hundreds is by regrouping 5 hundreds 1 ten as 51 tens. Then share the 51 tens.

Think

$$8 \times 6 = 48$$

$$8 \times 6 \text{ tens} = 48 \text{ tens}$$

$$8 \times 60 = 480$$

Longer Form

Write

$$\begin{array}{r} 60 \\ 8 \overline{)514} \\ \underline{480} \\ 34 \end{array}$$

or

Shorter Form

$$\begin{array}{r} 6 \\ 8 \overline{)514} \\ \underline{480} \\ 34 \end{array}$$

Regroup the 3 tens 4 ones that remain as 34 ones.

Then share the 34 ones.

Think

$$8 \times 4 = 32$$

Write

$$\begin{array}{r} 4 \\ 60 \\ 8 \overline{)514} \\ \underline{480} \\ 34 \\ \underline{32} \\ 2 \end{array}$$

or

$$\begin{array}{r} 64 \text{ R}2 \\ 8 \overline{)514} \\ \underline{480} \\ 34 \\ \underline{32} \\ 2 \end{array}$$

Then add and write the remainder to finish the longer form.

$$\begin{array}{r} 4 \\ 60 \end{array} \rightarrow 64 \text{ R}2$$

$$\begin{array}{r} 8 \overline{)514} \\ \underline{480} \\ 34 \\ \underline{32} \\ 2 \end{array}$$

Write the remainder here and the work is done!

When 514 is divided by 8, the quotient is 64 and the remainder is 2.

Working Together

Show each division in the shorter form.

$$\begin{array}{r}
 7 \overline{) 247} \\
 \underline{210} \\
 37 \\
 \underline{35} \\
 2 \\
 \underline{21} \\
 0
 \end{array}$$

1. $3 \overline{) 741}$

$$\begin{array}{r}
 200 \\
 \underline{600} \\
 141 \\
 \underline{120} \\
 21 \\
 \underline{21} \\
 0
 \end{array}$$

2. $7 \overline{) 270}$

$$\begin{array}{r}
 8 \overline{) 38} \text{ R}4 \\
 \underline{30} \\
 80 \\
 \underline{70} \\
 10 \\
 \underline{7} \\
 3
 \end{array}$$

Divide. Use the shorter form.

3. $4 \overline{) 692}$ 4. $5 \overline{) 243}$ 5. $6 \overline{) 840}$

Exercises

Divide. Use the shorter form.

1. $2 \overline{) 96}$ 2. $4 \overline{) 220}$ 3. $3 \overline{) 670}$
 4. $5 \overline{) 165}$ 5. $7 \overline{) 674}$ 6. $6 \overline{) 900}$
 7. $8 \overline{) 384}$ 8. $2 \overline{) 754}$ 9. $7 \overline{) 301}$
 10. $4 \overline{) 870}$ 11. $3 \overline{) 100}$ 12. $6 \overline{) 220}$
 13. $8 \overline{) 904}$ 14. $5 \overline{) 244}$ 15. $3 \overline{) 225}$
 16. $2 \overline{) 599}$ 17. $9 \overline{) 135}$ 18. $6 \overline{) 803}$
 19. $5 \overline{) 420}$ 20. $9 \overline{) 708}$ 21. $4 \overline{) 323}$
 22. $6 \overline{) 102}$ 23. $8 \overline{) 623}$ 24. $9 \overline{) 783}$

What would the calculator show for each quotient?

25. $822 \div 3 =$

26. $744 \div 2 =$

Division and multiplication help us decide what to buy.



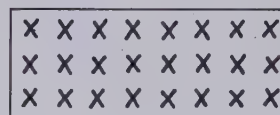
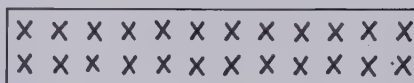
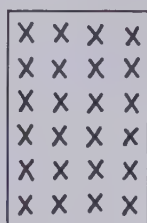
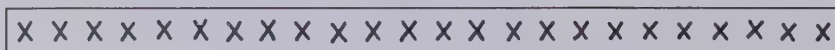
Solve.

1. A Thrift Pack has 5 pencils. It costs 35¢. A Bargain Pack has 7 pencils. It costs 42¢. How much are you paying for each pencil when you buy a Thrift Pack? a Bargain Pack?
2. 3 single pencils sell for 24¢. How much would 5 single pencils sell for?
3. How could you buy 5 pencils and spend the least amount of money?
4. How could you buy 10 pencils and spend the least amount of money?
5. How could you buy 20 pencils and spend the least amount of money?

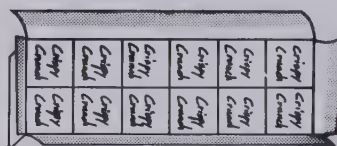
PROBLEM SOLVING

More Than One Solution

There are many ways to arrange 24 items in a rectangular array.



- Here is the shape of one carton that would hold a dozen boxes. Show the shape of another carton that would hold a dozen boxes in a different rectangular array.



- Show the shapes of two different cartons that would each hold 30 boxes in rectangular arrays.
- Show the shapes of all the different cartons that would each hold 18 boxes in rectangular arrays.
- Show the shape of a carton that would hold 24 boxes in 2 rectangular arrays, one on top of the other.
- 144 cans are packed 6 to a carton. How many cartons are needed? Draw an array that you can make with the cartons. Draw the cans in the cartons and count how many rows and columns are in the array of cans.

**PROBLEM
SOLVING**

Checking Up

Write the quotient.

1. $3\overline{)18}$ 2. $7\overline{)49}$ 3. $9\overline{)27}$ 4. $5\overline{)45}$ 5. $8\overline{)48}$ 6. $6\overline{)24}$

Write the quotient and the remainder.

7. $4\overline{)22}$ 8. $2\overline{)13}$ 9. $9\overline{)78}$ 10. $6\overline{)40}$ 11. $8\overline{)63}$ 12. $7\overline{)31}$

Solve.

13. The 8 children shared \$32 equally. How much did each child get?
14. 32 pennies were stacked in groups of 5. How many stacks were there? How many pennies were left over?

Divide.

15. $4\overline{)80}$ 16. $2\overline{)60}$ 17. $3\overline{)30}$ 18. $3\overline{)96}$ 19. $2\overline{)42}$ 20. $4\overline{)88}$
21. $3\overline{)693}$ 22. $2\overline{)846}$ 23. $4\overline{)480}$ 24. $2\overline{)56}$ 25. $6\overline{)84}$ 26. $3\overline{)78}$
27. $2\overline{)674}$ 28. $4\overline{)896}$ 29. $3\overline{)951}$ 30. $7\overline{)427}$ 31. $4\overline{)288}$ 32. $3\overline{)249}$
33. $8\overline{)984}$ 34. $3\overline{)705}$ 35. $9\overline{)513}$ 36. $7\overline{)392}$ 37. $5\overline{)740}$ 38. $6\overline{)516}$

Divide. Write the remainder beside the quotient.

39. $5\overline{)379}$ 40. $7\overline{)272}$ 41. $4\overline{)642}$ 42. $9\overline{)394}$ 43. $6\overline{)673}$ 44. $8\overline{)629}$

Solve.

45. 732 books were shared equally among 3 schools. How many books did each school get?
46. The school ordered 720 pencils in boxes of 5 each. How many boxes of pencils did the school order?
47. 256 children were placed in teams of 8. How many teams were there?
48. The 4 tables cost \$316. They are all alike. How much did each table cost?

Find the average.

49. 912 people were at the 4 concerts.
50. Debbie scored 105 points in 7 games.
51. The scales showed 117 kg for the 3 children.
52. The school spent \$320 for 8 films.

It takes you longer
to read that sentence
than this one.

Working Together

Name two objects that you think

1. are shorter than the nail.
2. are thinner than the round cereal.
3. are lighter than the marble.
4. hold less than the bottle.

Which object do you think is

5. the lightest?
6. the thinnest?

Which can you do more quickly,

7. blow up a balloon or pound a nail?
8. unlock a lock or open a safety pin?

Which can you do most quickly,

9. open a chain, put on a key, or close the chain?

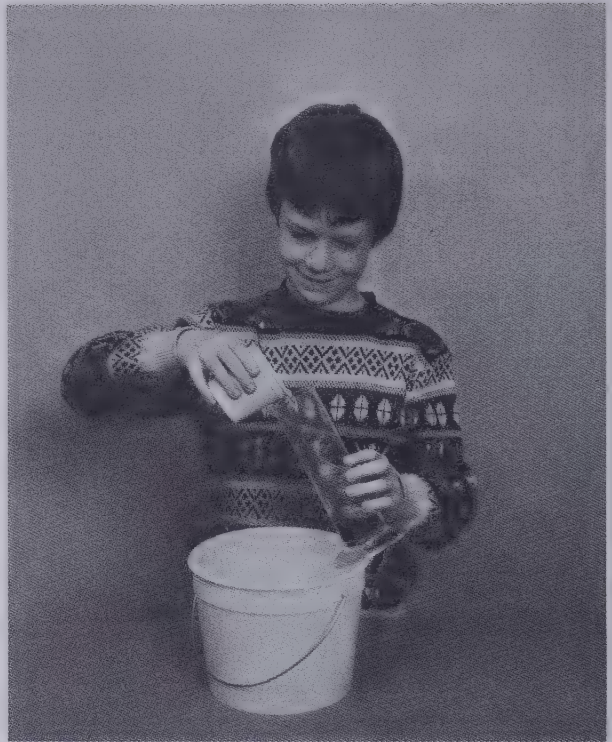
Which takes the longest time,

10. a blink, a sneeze, or a shiver?

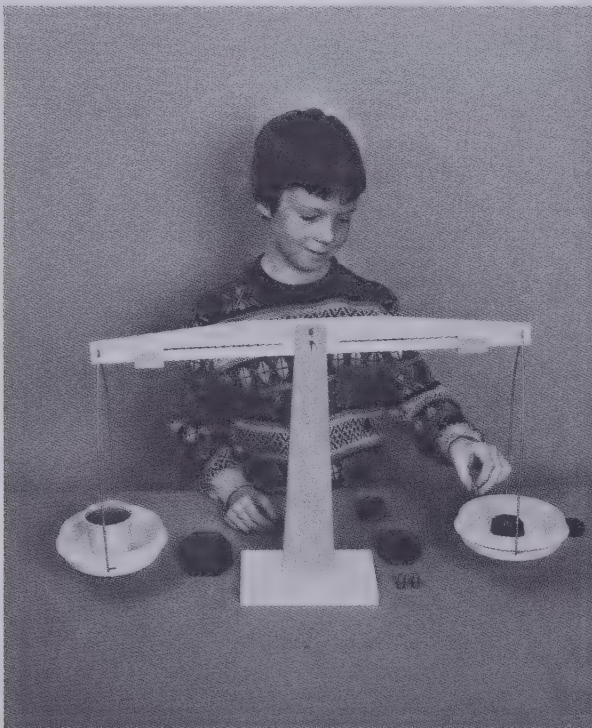
Now try the exercises on page 275.



To find how long an object is, you measure its **length**.



To find how much a container holds, you measure its **capacity**.



To find how heavy an object is, you measure its **mass**.



To find how quickly something happens, you measure **time**.

Exercises

Use the picture on pages 272–273.

Which do you think is longer,

1. the feather or the match?
2. the yarn or the pipe cleaner?

Which do you think holds more,

3. the nutshell or the spoon?
4. the trophy or the pen cap?

Which do you think is heavier,

5. the bandage or the pushpin?
6. the ring or the jack?

Which takes more time,

7. sewing a button or buttoning a coat?
8. sharpening a pencil or writing your name?

Make a chart like this.

	Length	Mass	Capacity	Time
9.				
10.				
11.				

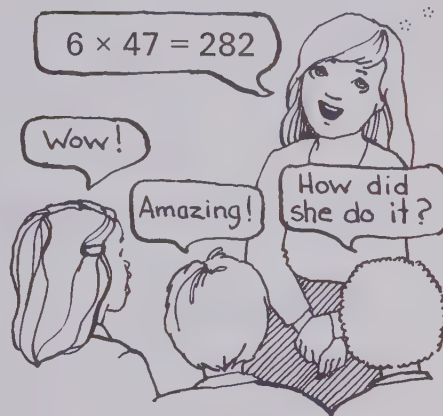
Use a check to show whether you would measure length, capacity, mass, or time.

9. How long is a ladybug?
10. How much ink is in a pen?
11. How long between two hiccups?
12. How much milk can a straw hold?
13. How light is a feather?
14. How thin is a dime?
15. How heavy is a butterfly?
- *16. How big is a thimble?

Learn how to multiply this way without using paper or pencil and dazzle your friends!

For 6×47 , think

$$\begin{aligned}
 47 &= 40 + 7, \text{ so} \\
 6 \times 47 &= (6 \times 40) + (6 \times 7) \\
 6 \times 40 &= 240 \\
 6 \times 7 &= 42 \\
 6 \times 47 &= 282
 \end{aligned}$$



Complete.

1. $8 \times 32 = (8 \times 30) + (8 \times 2)$
or $240 + 16$
 $8 \times 32 = \boxed{}$
2. $4 \times 76 = (4 \times \boxed{}) + (4 \times \boxed{})$
or $\boxed{} + \boxed{}$
 $4 \times 76 = \boxed{}$

Now, try these.

3. 5×67
4. 3×26
5. 2×85
6. 7×39
7. 9×56
8. 4×79
9. 7×48
10. 8×94

**try
this**

Units of Time

Ann and Bev have 3 h to spare on Saturday afternoon. Do they have enough time to watch a movie that lasts 150 min?



1 h = 60 min

2 h = 120 min

3 h = 180 min

150 min is between
2 h and 3 h.

s means seconds.
min means minutes.
h means hours.
d means days.

3 h is more than enough time to watch the movie.

Working Together

Complete each table.

1.

min	s
1	60
2	120
3	?
4	?
5	?

2.

h	min
1	60
2	?
3	?
4	?
5	?

3.

d	h
1	24
2	?
3	?
4	?
5	?

4.

weeks	d
1	7
2	?
3	?
4	?
5	?

5.

years	1	2	3	4
months	12	?	?	?
days	365	?	?	1460

plus one more day
every fourth year

Use your tables to help
you with these.

6. 3 weeks = d

7. 30 h = d h

8. 1001 d = years d

9. 1 year 4 months = months

Tell whether you would use seconds, minutes,
hours, or days to measure the time it takes

10. to bake a cake.

11. to sharpen a pencil.

12. to grow a flower.

Exercises

Use your tables to help you with these.

1. 5 min = s
2. 36 months = years
3. 6 weeks = d
4. 144 h = d
5. 50 h = d h
6. 2 h 20 min = min
7. 2 min 10 s = s
8. 150 min = h min
9. 30 d = weeks d
10. 200 s = min s
11. 3 years 7 months = months
12. 2 d 4 h = h
13. 1 year 30 d = d
14. 2 weeks 3 d = d
15. The child is 20 months old.
This is the same as
 year months.
16. A duck's egg takes 30 d
to hatch. This is the
same as weeks d.

Tell whether you would use seconds, minutes, hours, days, weeks, months, or years to complete each sentence.

17. The egg was boiled for 3 .
18. The roast was cooked in 3 .
19. John had a cold and missed 3 of school.
20. Spring, summer, fall, and winter are each 3 long.
21. Ellen blew out the candles on her cake in 3 .
22. In 3 we will be in the seventh grade.
23. The Kinsey family went on vacation for 3 .

Solve.

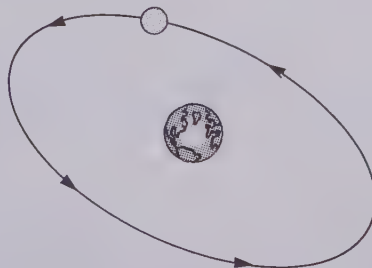
24. A car that travels 1 km in 45 s will travel 8 km in 360 s.
How many minutes will it take the car to travel 8 km?
25. For each kilogram, the roast should cook 40 min. How many minutes are needed to cook a 3 kg roast? How many hours?

Does it take a day, a month, or a year?

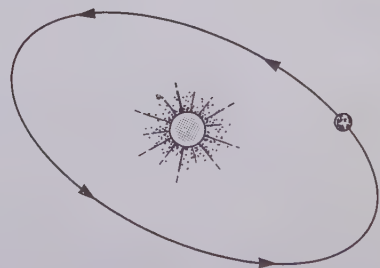
*26.



*27.



*28.

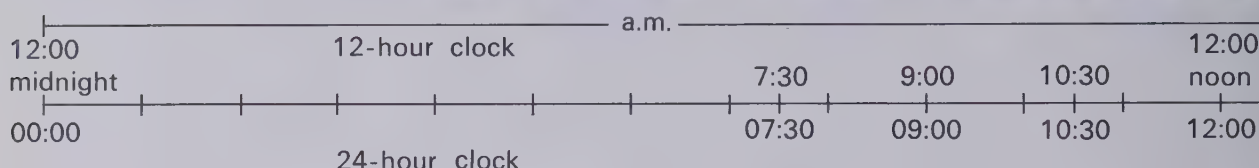


The 24-Hour Clock

Oliver wakes up at 7:30 a.m.

A 24-hour clock shows the time as 07:30.

Oliver wakes up
at seven thirty.



Working Together

For a 12-hour clock, **a.m.** names times before noon and **p.m.** names times after noon.

Write the time using a.m. or p.m.

1. six o'clock in the morning

2. four thirty in the afternoon

Continue the pattern to 3:00 p.m.

Continue the pattern to 01:15.

12-hour clock	24-hour clock
9:00 a.m.	09:00
10:00 a.m.	10:00

12-hour clock	24-hour clock
9:15 p.m.	21:15
10:15 p.m.	22:15

Complete.

5. 8:00 p.m. is h past noon.
For 8:00 p.m.,
a 24-hour clock shows .

6. 17:00 is h past noon.
For 17:00,
a 12-hour clock shows .

Complete the chart.

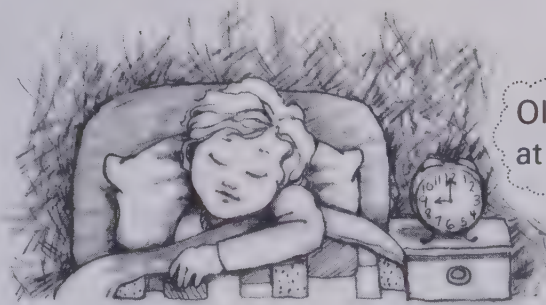
12-hour clock	?	5:10 p.m.	3:35 a.m.	?	?
24-hour clock	08:50	?	?	19:45	00:30

If the time is

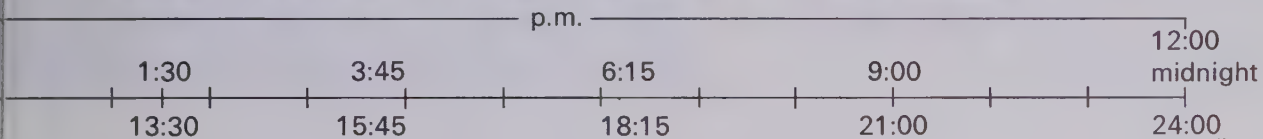
8. 11:15 a.m., what time will it be in 2 h 10 min?

9. 13:45, what time was it 4 h 45 min earlier?

Oliver goes to bed at 9:00 p.m.
A 24-hour clock shows the time as 21:00.



Oliver goes to bed
at 21 hours.



or 00:00 of
the next day

Exercises

Copy and complete the chart.

	12-hour clock	24-hour clock
1.	6:30 a.m.	06:30
2.	9:24 a.m.	?
3.	?	11:43
4.	1:10 p.m.	?
5.	?	23:50

What time would be shown
on a 12-hour clock and
on a 24-hour clock when

6. you wake up?
7. school begins?
8. morning recess ends?
9. you start lunch?
10. you get home from school?
11. you go to bed?

What would a 24-hour clock show

12. for 3 h later
than 4:05 p.m.?
13. for 1 h 10 min earlier
than 12:30 p.m.?

What would a 12-hour clock show

14. for 5 h 30 min later
than 09:15?
15. for 2 h 10 min earlier
than 15:18?

Cindy Nicholas swam from England
to France and back to England.
She began her swim at 07:50.
After 8 h 58 min she reached
France. It took her 10 h 57 min
to return to England.

- *16. At what time did she
reach France?
- *17. At what time did she reach
England on her return?
- *18. How much time did
she spend swimming?

Length in Millimetres

The **millimetre** (mm) is a standard unit of length.

A dime is about 1 mm thick.



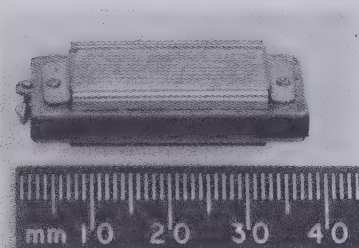
The millimetre ruler shows that the hole in the record measures between 7 mm and 8 mm.

$$10 \text{ mm} = 1 \text{ cm}$$

Working Together

Give the measurement in millimetres.

1.



Choose the best estimate for

2. a shirt buttonhole.

1 mm 10 mm 100 mm

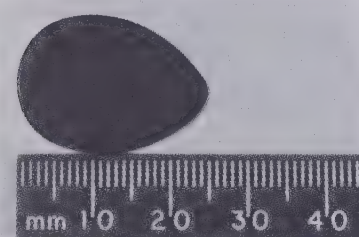
3. the eye of a fly.

1 mm 1 cm 20 mm

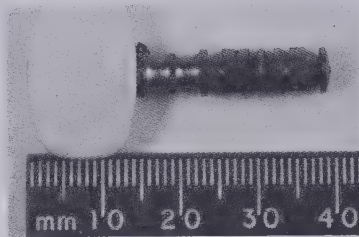
Exercises

Give each measurement in millimetres.

1.



2.



A flat toothpick is about 1 mm thick.

3. Look around.

Name two other items that have a measurement of about 1 mm.

Choose the best estimate for

4. the diameter of a pencil lead.

1 mm 10 mm 20 mm

5. the width of your thumbnail.

1 mm 1 cm 100 mm

6. the length of an apple seed.

1 mm 5 mm 10 mm

7. the thickness of this book.

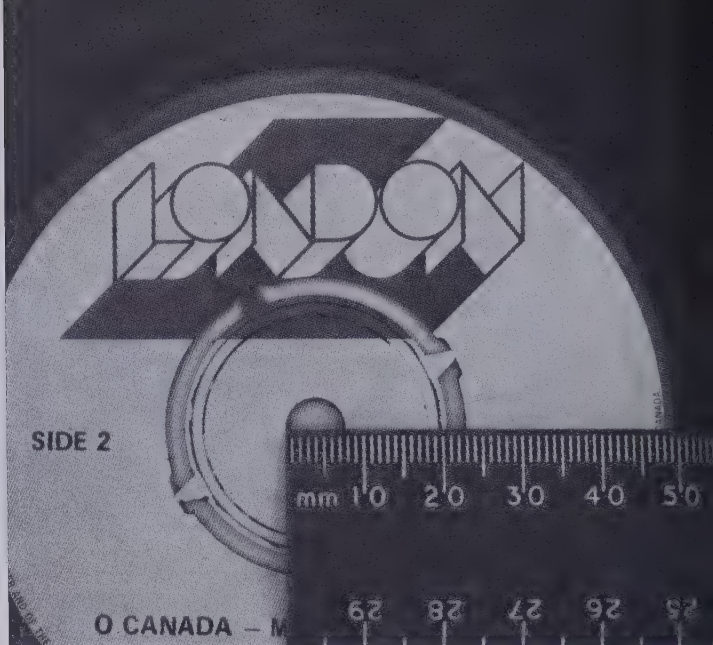
1 mm 10 mm 20 mm

8. the height of a stack of 10 sheets of paper.

1 mm 10 mm 2 cm

*9. the height of a stack of dimes that are worth \$1.00.

1 mm 1 cm 100 mm



Four Units of Length

The millimetre, centimetre, metre, and kilometre are the units of length that are used the most.

The guitar is about 1 m, 100 cm, or 1000 mm long.

The lowest string is about 1 mm thick.

The guitar neck

is about

half a metre,

50 cm, or

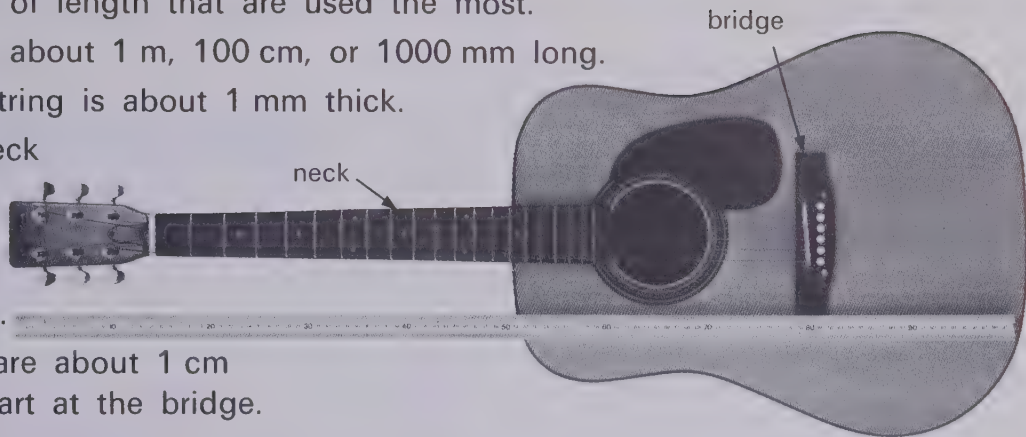
500 mm long.

Two strings are about 1 cm

or 10 mm apart at the bridge.

1000 guitars placed end to end

would cover a length of about 1 km.



Working Together

Which unit, the millimetre, the centimetre, the metre, or the kilometre, is best for measuring

1. the thickness of cardboard?
2. the height of your school?

Choose the best estimate for

3. the thickness of a guitar pick.

1 mm	1 cm	1 m
------	------	-----
4. the height of a piano bench.

1 mm	50 cm	1 m
------	-------	-----

Exercises

Which unit, the millimetre, the centimetre, the metre, or the kilometre, is best for measuring

1. the width of a TV screen?
2. the width of a postage stamp?
3. the length of a drumstick?
4. a parade route?
5. the length of the school gym?
6. the length of an eyelash?

Choose the best estimate for

7. the thickness of a pen.

1 mm	1 cm	1 m
------	------	-----
8. the thickness of a paper match.

1 mm	500 mm	1 m
------	--------	-----
9. the length of a skateboard.

1 mm	50 cm	1 m
------	-------	-----
10. the length of a baseball bat.

1 mm	1 cm	1 m
------	------	-----

Capacity in Millilitres and Litres

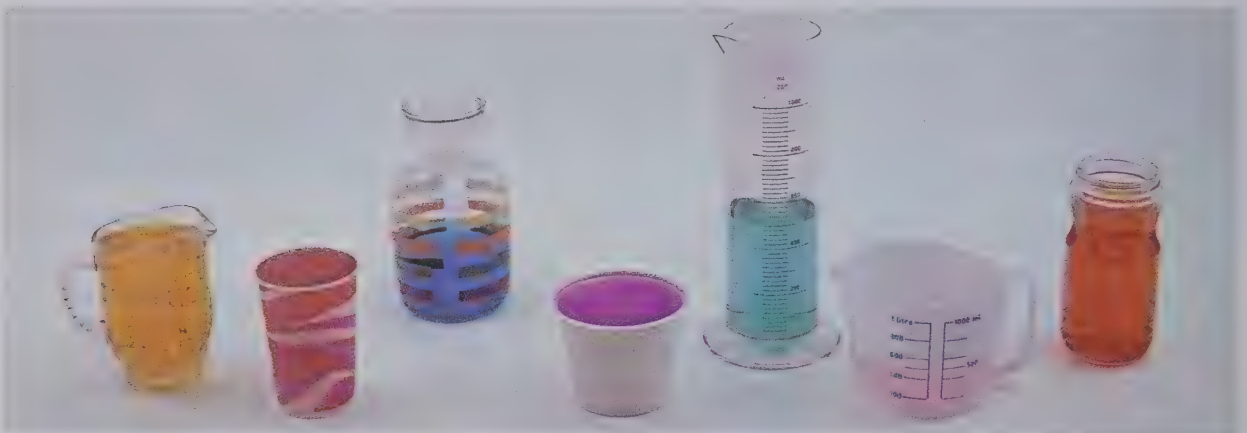
The millilitre (mL) and the litre (L) are standard units for measuring capacity.

Each of these holds about 1 mL.

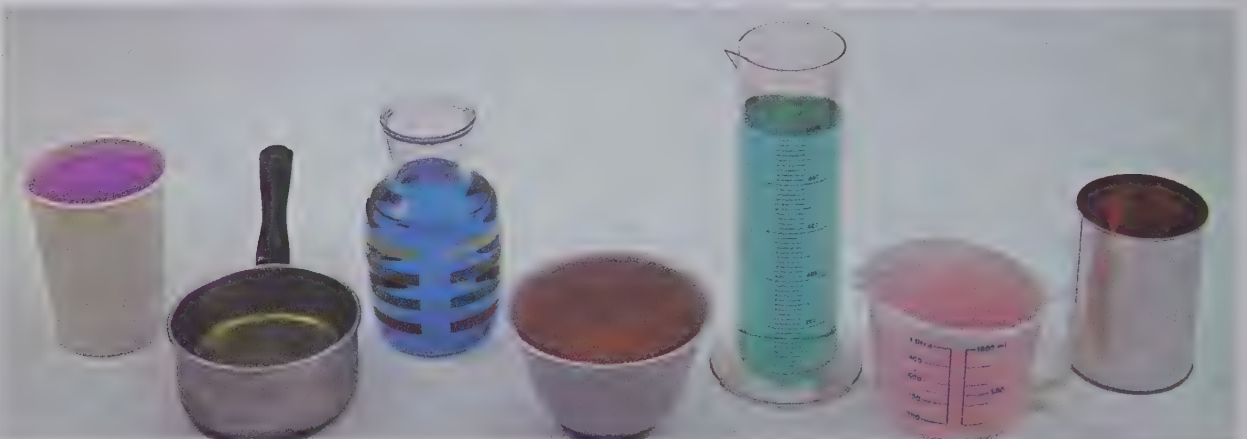
Remember that "capacity" is a word for how much something holds.



There is 500 mL in each of these.
500 mL is half a litre.



There is 1000 mL in each of these.
1000 mL is the same amount as 1 L.



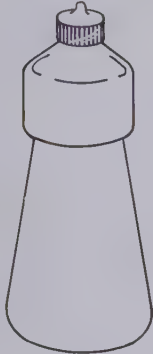
Working Together

Which unit, the millilitre or the litre, is better for measuring the capacity of

1. a juice glass?
2. a bathtub?

Choose the best estimate for each.

3.



1 mL 500 mL 1 L

4.



1 mL 500 mL 1 L

Match the capacity of each with A, B, or C

- | | |
|---------------------|----------------------------------|
| 5. a coconut shell | A between 1 mL and 500 mL |
| 6. the kitchen sink | B between 500 mL and 1 L |
| 7. a baby's bottle | C more than 1 L |

Exercises

Look around. Name an object with capacity

1. between 1 mL and 500 mL.
2. between 500 mL and 1 L.
3. more than 1 L.

Choose the best estimate for

- | | |
|--------------------------------------|--------|
| 4. the capacity of a soup can. | 1 mL |
| 5. the amount of juice in a cherry. | 500 mL |
| 6. how much milk fills four glasses. | 1 L |

Which best completes each sentence, mL or L?

7. For the party, George made 5 ? of lemonade.
8. One glass holds 250 ? of lemonade.

Name two items that are sold by capacity

9. in millilitres.
10. in litres.

Multiply or divide.

1. $882 \div 7$
2. 5×8.3
3. $46 \times \$84$
4. 3×290
5. $456 \div 6$
6. $760 \div 3$
7. 4×353
8. $6 \times \$4.25$
9. $\$368 \div 4$
10. $376 \div 8$
11. $298 \div 5$
12. 28×58
13. 7×108
14. 82×206
15. $560 \div 5$
16. $\$788 \div 2$
17. 2×67
18. $562 \div 6$
19. 35×371
20. 53×44
21. $501 \div 8$
22. $950 \div 4$
23. $7 \times \$47$
24. 94×76
25. $837 \div 9$
26. $\$558 \div 3$
27. $79 \times \$3.95$
28. $564 \div 7$
29. $756 \div 9$

**KEEPING
SHARP**

Mass in Grams and Kilograms

The gram (g) and the kilogram (kg) are standard units for measuring mass.

Each of these has a mass of about 1 g.

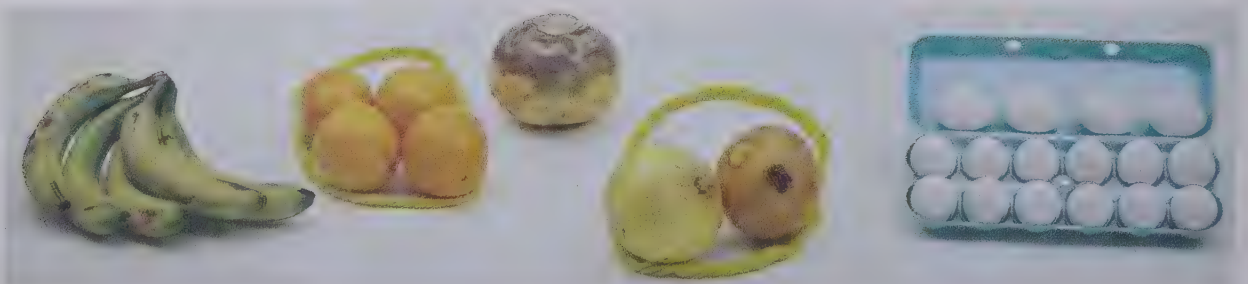
Remember that “mass” is a word for how much there is of something.



Each of these has a mass of about 500 g.
500 g is half a kilogram.



Each of these has a mass of about 1000 g.
1000 g is the same as 1 kg.



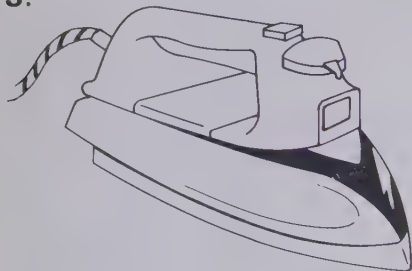
Working Together

Which unit, the gram or the kilogram, is better for measuring the mass of

1. a piano?
2. a penny?

Choose the best estimate for each.

- 3.
- 4.



1 g 500 g 1 kg

1 g 500 g 1 kg

Match the mass of each with A, B, or C.

- | | |
|--------------|---------------------------------|
| 5. this book | A between 1 g and 500 g |
| 6. a desk | B between 500 g and 1 kg |
| 7. a ruler | C more than 1 kg |

Exercises

Look around. Name an object with mass

1. between 1 g and 500 g.
2. between 500 g and 1 kg.
3. more than 1 kg.

Choose the best estimate for the mass of

- | | |
|---------------------|-------|
| 4. a loaf of bread. | 1 g |
| 5. a safety pin. | 500 g |
| 6. a pumpkin. | 1 kg |

Which best completes each sentence, g or kg?

7. The mass of a tennis ball is about 40 ?.
8. The mass of a desk telephone is about 2 ?.

Name two items that are sold by mass

9. in grams.
10. in kilograms.

Add, subtract, multiply, or divide.

1. $2032 - 1346$
2. 6×37
3. $5.8 + 6.5$
4. $3.7 - 0.9$
5. $49 \times \$2.98$
6. $542 \div 8$
7. $\$485 + \487
8. $511 \div 7$
9. 30×47
10. $806 - 209$
11. $346 + 959$
12. $740 \div 2$
13. $\$692 \div 4$
14. 89×28
15. $167 \div 6$
16. $23.0 - 9.6$
17. $5 \times \$4.08$
18. $18.5 + 17.2$
19. $\$4.20 - \3.67
20. $151 - 54$
21. $3438 + 3486$
22. $2.73 + 8.67$
23. $3 \times \$654$
24. $4422 - 588$
25. $430 \div 3$
26. $\$9.65 + \4.25
27. 37×528
28. $380 \div 5$
29. 8×2.8

**KEEPING
SHARP**

Millilitres and Litres

1250 mL of milk is needed for the rice pudding.

Eldon has 1 L of milk. Does he have enough?

PUDDINGS

RICE PUDDING

150 mL rice
300 mL water
5 mL butter
1250 mL milk
150 mL sugar
pinch of salt

Cook the rice, water, and butter over medium heat until the water is almost gone. Add remaining ingredients and cook about 1 h over low heat.

Makes about 6 servings of 225 mL each. 125 mL of raisins can be added.

Eldon has 1 L, or 1000 mL. He needs 1250 mL.

He needs 250 mL more for the rice pudding.

1250 mL =

1 L and 250 mL more.

Working Together

Complete.

1. 2000 mL = L

3. 1625 mL =

1000 mL and mL more.

1625 mL = L mL

5. 4750 mL = L mL

2. 3 L = mL

4. 2 L 400 mL =

mL and 400 mL more.

2 L 400 mL = mL

6. 1 L 750 mL = L

Exercises

Complete.

1. 6000 mL = L

2. 3845 mL = 3 L mL

3. 2050 mL = L mL

4. 6 L 325 mL = mL

5. 4 L 600 mL = mL

6. 4 L = mL

7. 1500 mL = L mL

8. 4000 mL = L

9. 3 L 75 mL = mL

10. 5005 mL = L mL

Solve.

11. A milk pouch holds 1333 mL.

A new pouch is opened and used for the rice pudding recipe above. How much milk will be left in the pouch?

12. How much milk is needed for a double recipe of rice pudding?

*13. About how much pudding is there for serving after using the recipe above?

Grams and Kilograms

One cookbook says there can be four servings from 1 kg of steak.

If a steak has a mass of 1125 g, is there enough for four servings?

For four servings, 1 kg, or 1000 g, is needed. If a steak has a mass of 1125 g, there is more than enough for four servings.



Working Together

Complete.

1. 3000 g = kg
2. 2 kg = g
3. 1420 g =
1000 g and g more.
1420 g = kg g
4. 3 kg 375 g =
 g and 375 g more.
3 kg 375 g = g
5. 3925 g = kg g
6. 4 kg 750 g = g

Exercises

Complete.

1. 5000 g = kg
2. 3870 g = kg g
3. 4006 g = kg g
4. 2 kg 575 g = g
5. 1 kg 720 g = g
6. 7000 g = kg
7. 5 kg 500 g = g
8. 2 kg 2 g = g
9. 6 kg = g
10. 2075 g = kg g

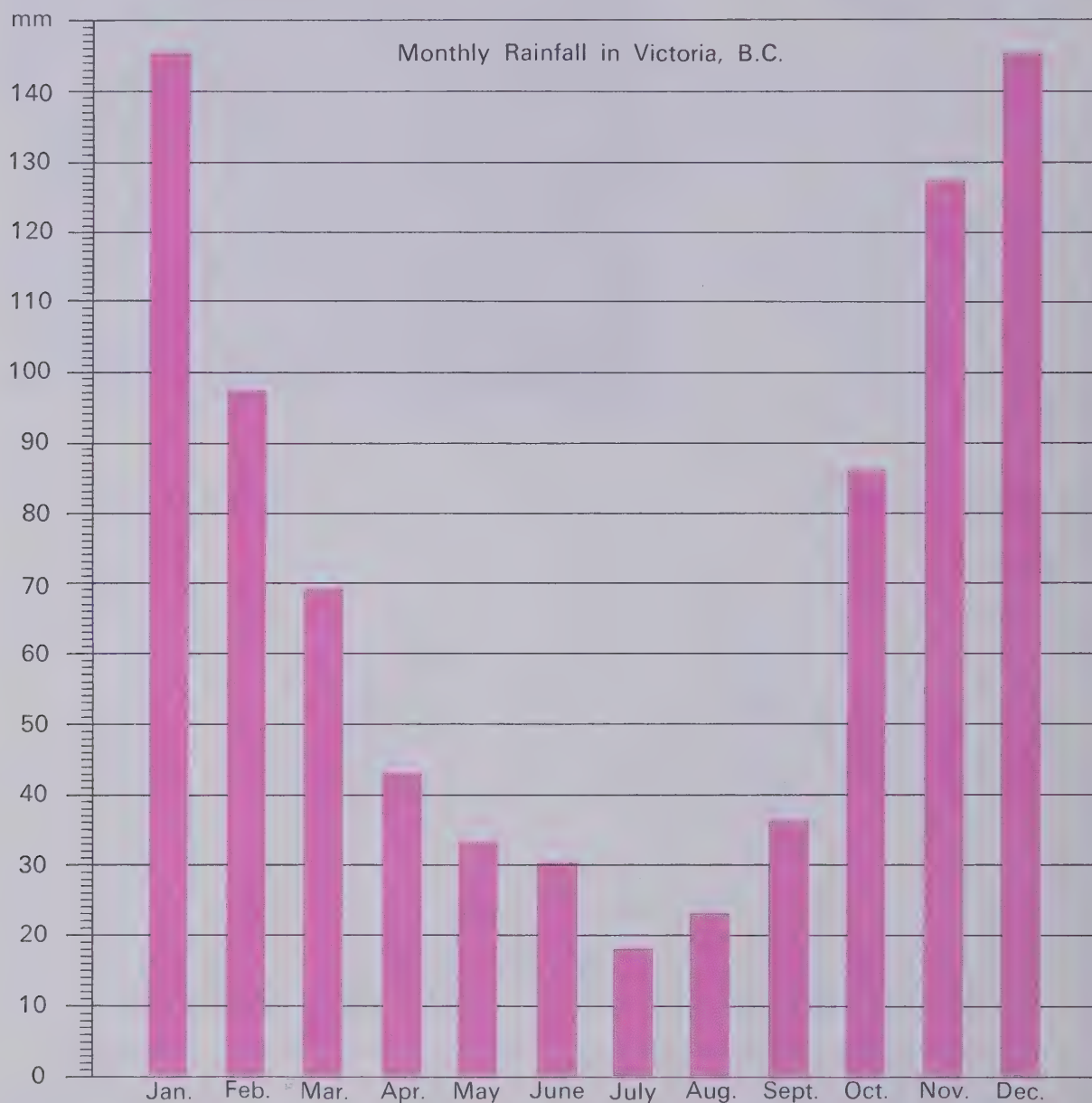
Solve.

11. An uncooked roast had a mass of 3 kg. After cooking, its mass was 2 kg 785 g. How much did the roast lose in cooking?
- *12. If a steak with a mass of 1 kg gives 4 servings, about how many grams will be in each serving?
- *13. 2000 g of pork and 4000 g of beef were ground up. How many kilograms of ground beef were there?

Working with Graphs

The graph shows how much rain fell each month in Victoria one year.

Rainfall is measured in millimetres.



Working Together

1. Which month had the least rainfall?
2. Which months had the same amount of rain?
3. Which month had more rain, February or October? How much more?
4. About how much rain fell in July and August together? in June, July, and August?

Exercises

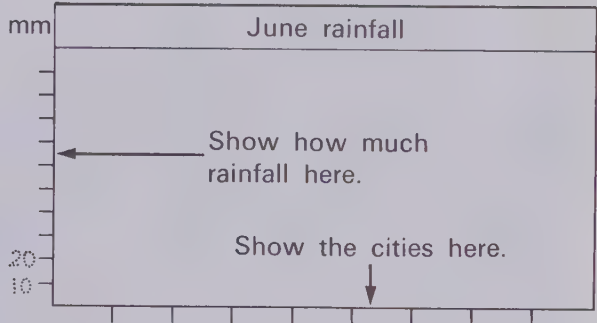
Draw a graph for the information in each exercise.

Write four questions that can be asked about each graph.

1. June rainfall:

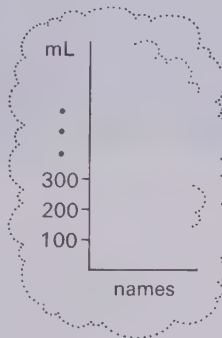
Calgary	90 mm
Churchill	40 mm
Ottawa	70 mm
Quebec	100 mm
Saskatoon	55 mm
Vancouver	45 mm
Victoria	30 mm
Yellowknife	15 mm

Prepare your graph paper like this:



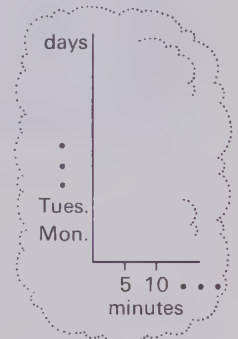
2. Milk drank yesterday:

Axel	1250 mL
Betsy	800 mL
Ellie	800 mL
Amy	250 mL
Herb	1750 mL
Jan	1000 mL
Marvin	1500 mL



3. Joshua's piano practice:

Monday	35 min
Tuesday	30 min
Wednesday	25 min
Thursday	45 min
Friday	30 min
Saturday	15 min
Sunday	5 min



The man has to move the fox, the duck, and the bag of corn across a river in a boat.

He can carry only one at a time in the boat. He cannot leave the duck alone with the corn, and it would be too dangerous to leave the fox alone with the duck.

How can the man get the fox, the duck, and the corn across the river?

**PROBLEM
SOLVING**

Estimating Answers

How many seconds do you think you would need...



...to take a bite from a doughnut?

...to eat the whole doughnut?

Tell how you would estimate

1. the amount of string
you should cut from
a ball to tie a box.

3. how many times you
blink in an hour.

2. the amount of money
you need when you
go shopping.

4. the number of words on
one page of a storybook.

What signs help you estimate

5. the temperature outside
when you are inside?

7. if a friend
has a fever?

9. how hot a stove burner is?

6. the time
of day?

8. how long it will take
to dry the dishes?

10. water temperature?

**PROBLEM
SOLVING**

Checking Up

Do you measure length, mass, capacity, or time to find

1. how light an eraser is?
2. how quickly you can erase a word?
3. how thick the eraser is?

Choose the best estimate for

4. the mass of a marshmallow. \longrightarrow 1 g 500 g 1 kg
5. the width of a safety pin. \longrightarrow 1 mm 1 cm 1 m
6. the capacity of a pop can. \longrightarrow 1 mL 500 mL 1 L
7. how long a TV program lasts. \longrightarrow 1 s 1 min 1 h
8. breakfast time. \longrightarrow 4:30 a.m. 7:45 a.m. 8:10 p.m.
9. supper time. \longrightarrow 06:10 11:15 17:45

Choose the unit that best completes each sentence.

- | | | | |
|----|-----|----|----|
| mm | cm | m | km |
| g | kg | mL | L |
| s | min | h | d |
10. A bag of potatoes has a mass of about 10 ? .
 11. It takes about 3 ? to pour a glass of milk.
 12. A raisin is about 12 ? long.
 13. A teakettle holds about 3 ? .
 14. The mass of a golf ball is about 44 ? .
 15. A drinking straw holds about 4 ? .
 16. A bath takes about 10 ? .
 17. The room is about 4 ? wide.

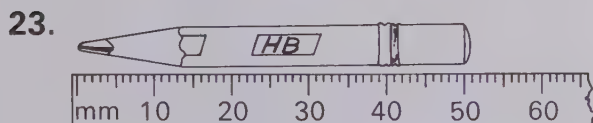
Complete.

- | | | | | |
|-----|---------------|-----------|-------|-----------|
| 18. | 12-hour clock | 2:16 a.m. | ? | 9:18 p.m. |
| | 24-hour clock | ? | 13:10 | ? |
19. 28 d = $\boxed{\text{ }} \times \boxed{\text{ }}$ weeks
 20. 3 h 20 min = $\boxed{\text{ }} \times \boxed{\text{ }}$ min

What time is it when it is

21. 3 h 15 min later than 10:30?
22. 5 h 30 min earlier than 2:30 p.m.?

Give the length in millimetres.



Complete.

25. 1 L 325 mL = $\boxed{\text{ }} \times \boxed{\text{ }}$ mL
26. 2047 mL = $\boxed{\text{ }} \times \boxed{\text{ }}$ L $\boxed{\text{ }} \times \boxed{\text{ }}$ mL
27. 2 kg 37 g = $\boxed{\text{ }} \times \boxed{\text{ }}$ kg $\boxed{\text{ }} \times \boxed{\text{ }}$ g
28. 3624 g = $\boxed{\text{ }} \times \boxed{\text{ }}$ kg $\boxed{\text{ }} \times \boxed{\text{ }}$ g

Show this information in a graph.

24. Daily rainfall: Sunday 7 mm, Monday 3 mm, Tuesday 4 mm, Wednesday 5 mm, Thursday 0 mm, Friday 11 mm, Saturday 14 mm

Checking Skills

Add.

$$\begin{array}{r} 1. \quad 427 \\ 127 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 26.3 \\ 9.3 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 1.74 \\ 4.53 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 1786 \\ 822 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 6.3 \\ 3.8 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \$3.48 \\ 4.64 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \$659 \\ 683 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 28.5 \\ 56.5 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 53.91 \\ 61.76 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 1973 \\ 2213 \\ 647 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 8.2 \\ 19.6 \\ 7.5 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad \$11.28 \\ 7.36 \\ 4.57 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 541 \\ 1313 \\ 90 \\ 232 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 13.2 \\ 4.4 \\ 0.6 \\ 21.5 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad \$38.27 \\ 4.38 \\ 27.67 \\ 42.09 \\ \hline \end{array}$$

Subtract.

$$\begin{array}{r} 16. \quad 418 \\ 194 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 7.2 \\ 2.3 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 4.33 \\ 2.70 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad \$187 \\ 98 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 62.4 \\ 38.7 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad \$7.34 \\ 5.56 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 5602 \\ 4934 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 11.1 \\ 3.2 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad \$62.48 \\ 24.89 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 3136 \\ 244 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 45.0 \\ 10.7 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad \$4.24 \\ 3.79 \\ \hline \end{array}$$

$$\begin{array}{r} 28. \quad \$3000 \\ 1216 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \quad 8.6 \\ 5.8 \\ \hline \end{array}$$

$$\begin{array}{r} 30. \quad 70.37 \\ 15.66 \\ \hline \end{array}$$

$$\begin{array}{r} 31. \quad 1018 \\ 963 \\ \hline \end{array}$$

$$\begin{array}{r} 32. \quad 97.5 \\ 27.8 \\ \hline \end{array}$$

$$\begin{array}{r} 33. \quad \$23.44 \\ 6.95 \\ \hline \end{array}$$

Multiply.

$$\begin{array}{r} 1. \quad 43 \\ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 322 \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 112 \\ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 131 \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 23 \\ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 374 \\ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 218 \\ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 132 \\ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad \$685 \\ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 584 \\ 7 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 87 \\ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad \$384 \\ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad \$6.02 \\ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad \$4.72 \\ 7 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad \$7.95 \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 5.3 \\ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 7.4 \\ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 2.8 \\ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 67 \\ 20 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 59 \\ 26 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 645 \\ 59 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 571 \\ 44 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 38 \\ 17 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad \$418 \\ 30 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 726 \\ 51 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 946 \\ 39 \\ \hline \end{array}$$

$$\begin{array}{r} 27. \quad \$38 \\ 28 \\ \hline \end{array}$$

$$\begin{array}{r} 28. \quad \$3.19 \\ 50 \\ \hline \end{array}$$

$$\begin{array}{r} 29. \quad \$6.49 \\ 37 \\ \hline \end{array}$$

$$\begin{array}{r} 30. \quad \$4.86 \\ 41 \\ \hline \end{array}$$

Tickets cost \$2.75 for an adult and \$1.25 for a child.

31. How much will 5 adult tickets cost?

32. How much will tickets cost for 12 children?

Divide.

1. $3 \overline{)9}$ 2. $6 \overline{)24}$ 3. $3 \overline{)21}$
4. $5 \overline{)30}$ 5. $4 \overline{)32}$ 6. $6 \overline{)\$54}$
7. $9 \overline{)450}$ 8. $2 \overline{)120}$ 9. $8 \overline{)560}$
10. $4 \overline{)800}$ 11. $7 \overline{)280}$ 12. $5 \overline{)\$450}$
13. $3 \overline{)96}$ 14. $6 \overline{)246}$ 15. $4 \overline{)168}$
16. $5 \overline{)565}$ 17. $2 \overline{)824}$ 18. $7 \overline{)\$427}$
19. $3 \overline{)495}$ 20. $2 \overline{)796}$ 21. $7 \overline{)371}$
22. $8 \overline{)384}$ 23. $5 \overline{)85}$ 24. $4 \overline{)68}$
25. $2 \overline{)110}$ 26. $2 \overline{)548}$ 27. $5 \overline{)\$215}$
28. $9 \overline{)243}$ 29. $3 \overline{)882}$ 30. $7 \overline{)539}$
31. $4 \overline{)260}$ 32. $9 \overline{)756}$ 33. $5 \overline{)\$410}$
34. $9 \overline{)75}$ 35. $2 \overline{)367}$ 36. $4 \overline{)110}$
37. $8 \overline{)286}$ 38. $7 \overline{)636}$ 39. $6 \overline{)338}$
40. $6 \overline{)810}$ 41. $3 \overline{)949}$ 42. $8 \overline{)771}$
43. $7 \overline{)600}$ 44. $8 \overline{)502}$ 45. $9 \overline{)\$387}$
46. $3 \overline{)220}$ 47. $8 \overline{)932}$ 48. $6 \overline{)524}$
49. $9 \overline{)871}$ 50. $6 \overline{)683}$ 51. $5 \overline{)254}$

308 children were placed in
4 groups for fall sports.

52. How many were in each group?
53. The children were placed in
7 groups for spring sports.
How many were in each group?

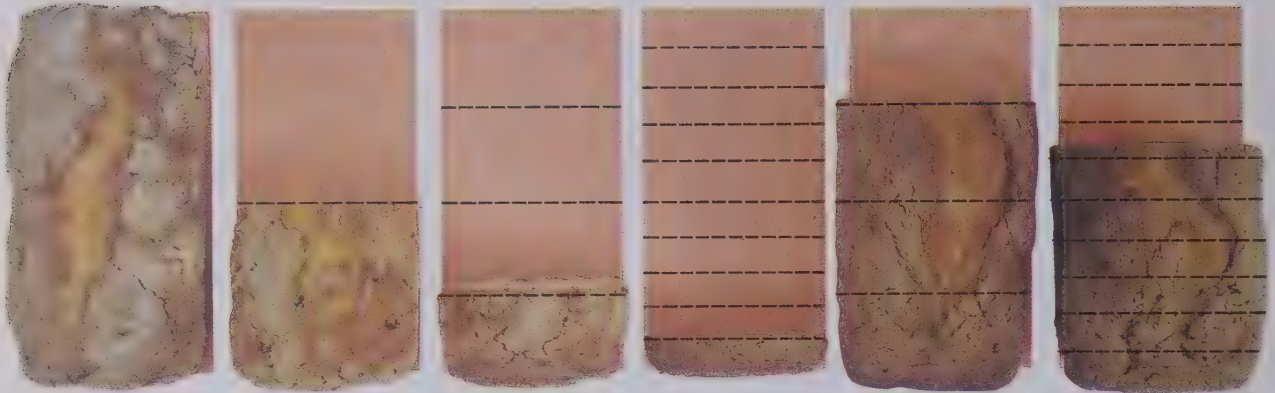
Solve.

1. A wrist radio costs \$7.95.
Batteries for it cost \$1.29.
How much do the radio and
the batteries cost in all?
2. The dentist's bill was \$72
for the 4 Burdette children.
The fee was the same for
each child. What was the
dentist's fee for each child?
3. The 10-speed bicycle costs
\$112. The one-speed bicycle
costs \$58. How much more
does the 10-speed bicycle cost?
4. Sandra bought 6 boxes of nails.
There are 288 nails in each box.
How many nails did she buy?
5. Each box of nails costs \$1.79.
How much do 6 boxes cost?
6. The names of 507 students are
listed in 3 columns. There
are the same number of names
in each column. How many
names are in each column?
7. The Miller family plans to
take a holiday trip of 1675 km
and another of 768 km. How
many kilometres are they
planning to travel in all?
8. The garden centre ordered 15
bags of seed. Each bag holds
25 kg. How many kilograms
of seed did it order?
9. 8 buttons are on each card.
Mr. Tailor needs 140 buttons.
How many cards should he buy?

13 FRACTIONS AND DECIMALS

Practice with Halves, Fourths, and Tenths

Ricky cut the cakes to show fractions.



1

$\frac{1}{2}$

$\frac{1}{4}$

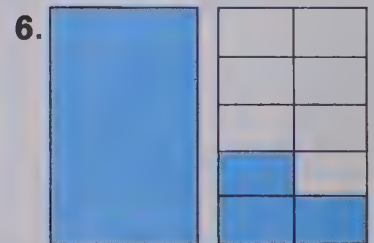
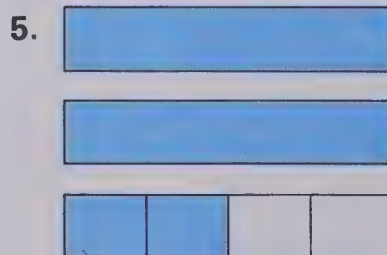
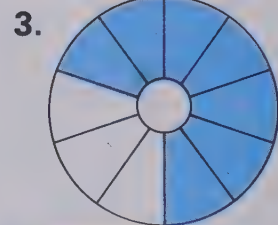
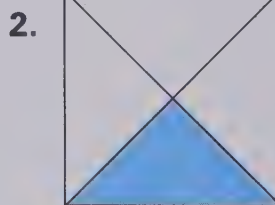
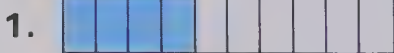
$\frac{1}{10}$

$\frac{3}{4}$

$\frac{6}{10}$

Exercises

Use a fraction to show how much is shaded.



Draw and shade to show each amount.

Example:
For $1\frac{3}{4}$, draw



7. $1\frac{1}{4}$

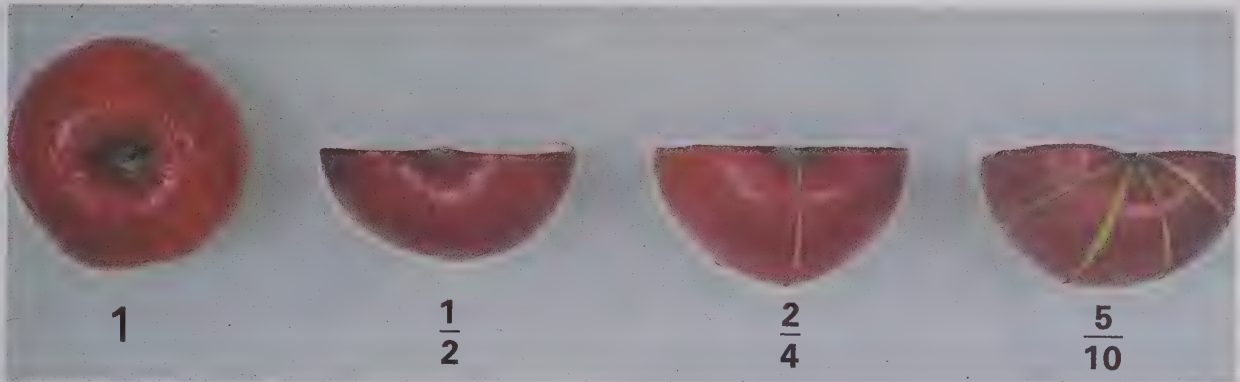
8. $\frac{9}{10}$

9. $2\frac{1}{2}$

10. $\frac{2}{4}$

11. $1\frac{5}{10}$

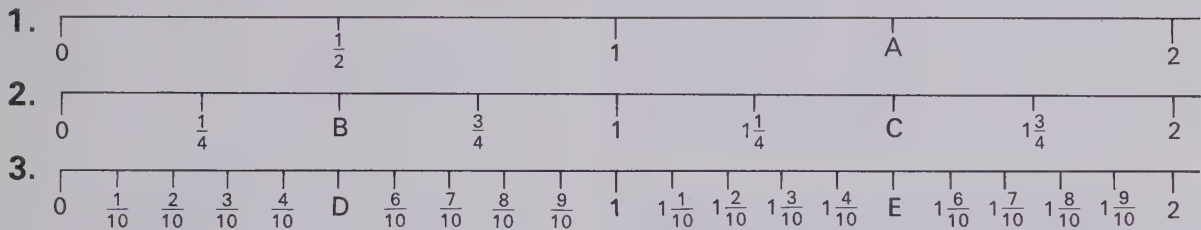
Equivalent Fractions for One-Half



$\frac{1}{2}$, $\frac{2}{4}$, and $\frac{5}{10}$ all name the same amount.

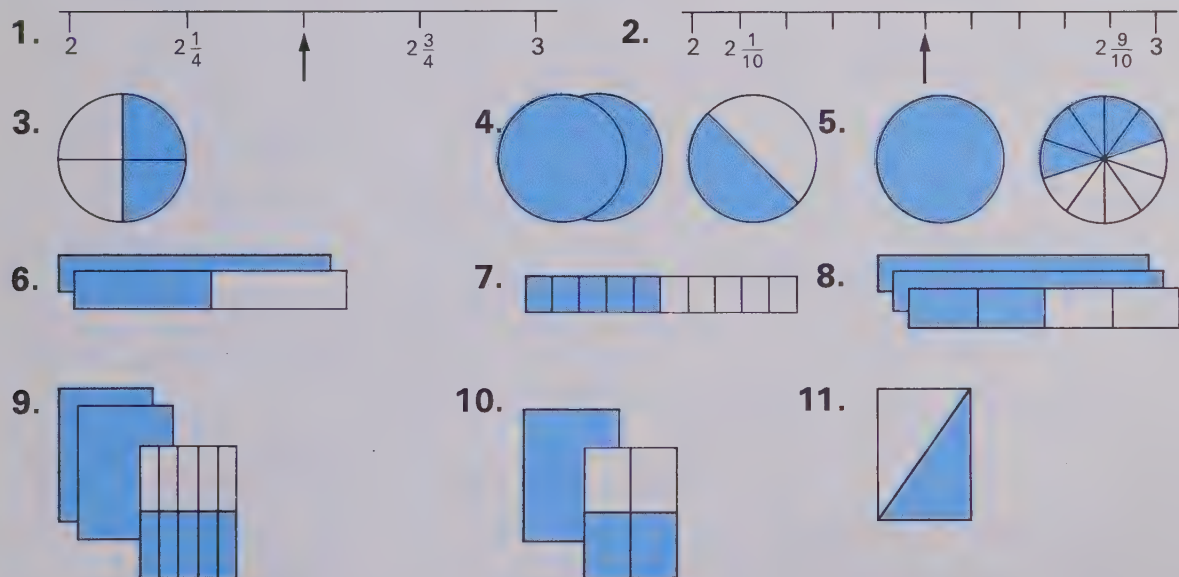
Working Together

What numbers match the points marked with letters?



Exercises

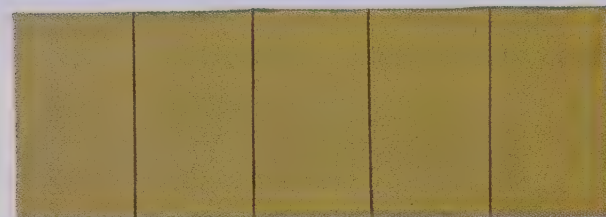
Use $\frac{1}{2}$, $\frac{2}{4}$, or $\frac{5}{10}$ to write the numeral that matches each picture best.



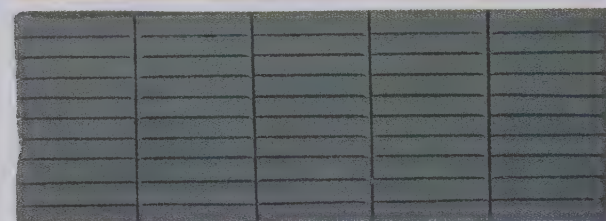
Decimal Names for One-Half



There is as much modeling clay
in one-half of a block...



...as there is in
five-tenths of a block...



...or in
ten-hundredths of a block.

$\frac{1}{2}$, 0.5, and 0.50 all name the same amount.

Exercises

Write each of these as a decimal showing tenths.

1. $\frac{1}{2}$ 2. 0.50 3. $2\frac{1}{2}$ 4. 4.50 5. $6\frac{1}{2}$ 6. $1\frac{1}{2}$

Write each of these as a decimal showing hundredths.

7. $1\frac{1}{2}$ 8. $\frac{1}{2}$ 9. 7.5 10. $4\frac{1}{2}$ 11. 0.5 12. $3\frac{1}{2}$

Write each of these using the fraction $\frac{1}{2}$.

13. 2.50 14. 1.5 15. 3.50 16. 0.5 17. 5.5 18. 0.50

Fourths and Quarters

The value of 25 pennies is the same as the value of 1 quarter.



\$0.25



\$0.25

This is called a **quarter** because its value is one-fourth the value of a dollar.
0.25 and $\frac{1}{4}$ each name the same amount.

Working Together

Complete each chart.

	Number of quarters	Fraction of a dollar	Value
1.	1	$\frac{1}{4}$	\$0.25
2.	2		
3.	3		

	Decimal	Fraction
4.	0.25	$\frac{1}{4}$
5.		$\frac{2}{4}$
6.	0.75	
7.		$1\frac{1}{4}$

Exercises

Copy and complete each chart.

	Bills and coins	Value
1.	1 dollar and 3 quarters	
2.	2 dollars and 1 quarter	
3.	2 quarters	
4.	3 dollars and 3 quarters	
5.	1 dollar and $\frac{3}{4}$ quarters	\$1.50
6.	2 dollars and $\frac{3}{4}$ quarters	\$2.75
7.	$\frac{3}{4}$ dollar and $\frac{1}{4}$ quarter	\$1.25

	Fraction using fourths	Decimal
8.	$\frac{3}{4}$	
9.		0.50
10.	$2\frac{1}{4}$	
11.		1.25
12.	$3\frac{2}{4}$	

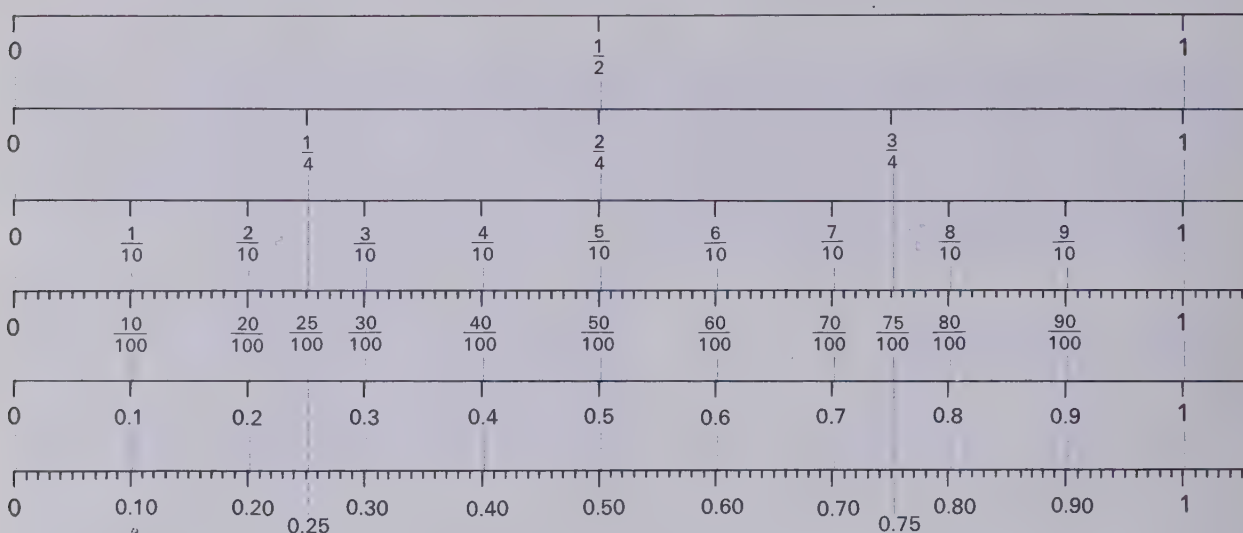
Write the fraction that completes each sentence.

13. \$0.75 is $\frac{\quad}{4}$ of the value of 1 dollar.

14. The value of 2 quarters is $\frac{\quad}{4}$ of the value of 1 dollar.

Equivalent Fractions and Decimals

These number lines show different ways to name some numbers.



$\frac{1}{10}$, $\frac{10}{100}$, 0.1, and 0.10 all name the same number.

Working Together

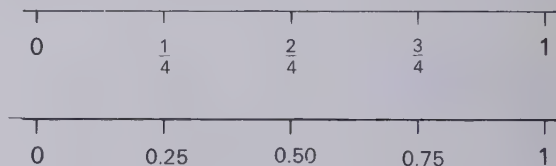
What decimal matches the picture and completes the sentence?

1.



$$\frac{1}{2} = \square$$

2.



$$\frac{3}{4} = \square$$

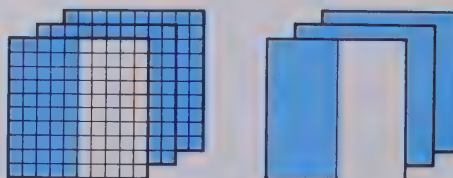
What fraction matches the picture and completes the sentence?

3.



$$1.25 = \square$$

4.



$$2.50 = \square$$

Show each of these as a decimal.

5. $\frac{7}{10}$

6. $2\frac{2}{4}$

7. 1

Show each of these as a fraction using fourths or one-half.

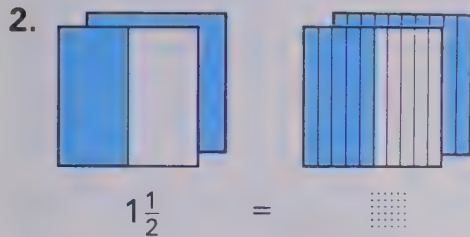
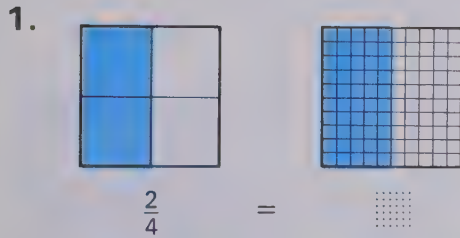
8. 0.25

9. 1.5

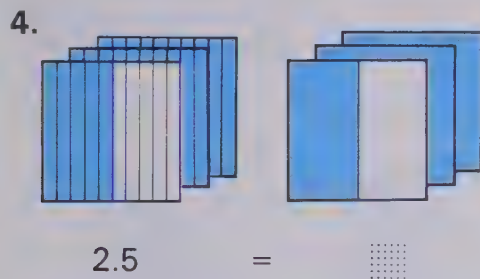
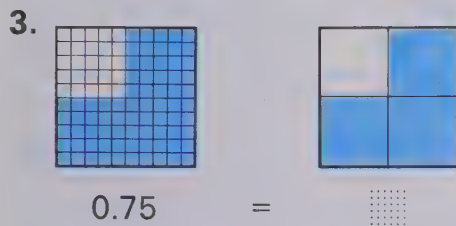
10. 1.75

Exercises

Write the decimal that matches the picture and completes the sentence.



Write the fraction that matches the picture and completes the sentence.



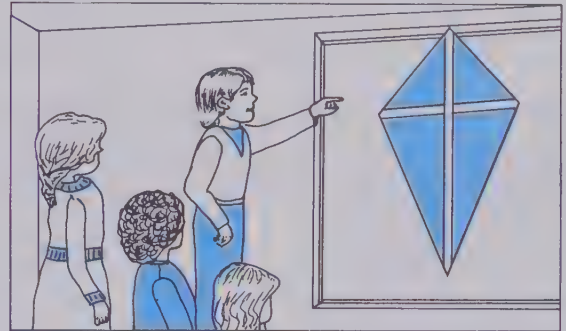
Write each of these as a decimal.

5. $\frac{1}{4}$ 6. $3\frac{1}{2}$ 7. $1\frac{3}{4}$

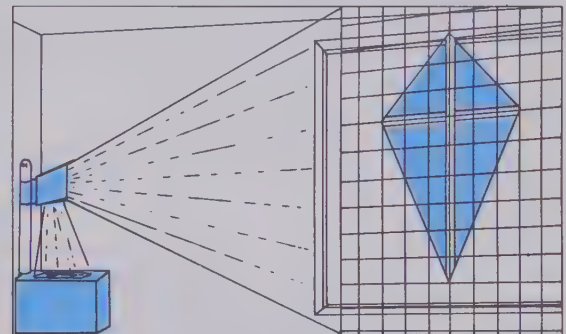
Write each of these as a fraction showing fourths or one-half.

8. 2.25 9. 0.50 10. 3.75

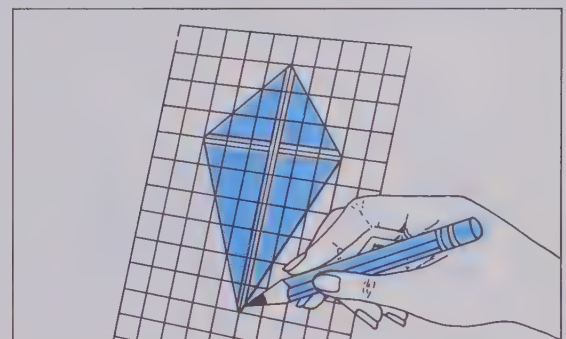
To make a pattern, the class hung a kite on the wall.



Next, they placed a grid over the kite.



Then they copied the kite on graph paper.



1. Make a pattern in the way suggested above.

**try
this**

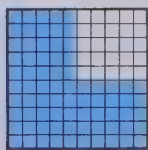
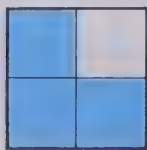
Comparing and Ordering Fractions

In this game, the player showing the greater number wins the cards. The first numbers that Mara and Joey turned over were equal. Then Mara turned over $\frac{3}{4}$ and Joey turned over $\frac{7}{10}$. Who won the cards?

$$\frac{1}{2} = 0.50$$

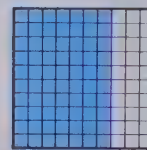


Mara turned over $\frac{3}{4}$.



$$\frac{3}{4} = 0.75$$

Joey turned over $\frac{7}{10}$.



$$\frac{7}{10} = 0.70$$

0.75 is greater than 0.70.

$\frac{3}{4}$ is greater than $\frac{7}{10}$.

Mara won the cards.

$$0.75 > 0.70$$

$$\frac{3}{4} > \frac{7}{10}$$

Working Together

Give a one-place decimal for each fraction. Tell which of the two decimals is greater. Then tell which of the fractions is greater.

1.

Fraction	Decimal
$\frac{1}{2}$	
$\frac{6}{10}$	


Give a two-place decimal for each fraction. Tell which of the two decimals is greater. Then tell which of the fractions is greater.

2.

Fraction	Decimal
$\frac{1}{4}$	
$\frac{2}{10}$	

Use $>$ or $<$ to make a true statement.

3. $\frac{1}{2}$  $\frac{40}{100}$


4. $\frac{6}{10}$  $\frac{3}{4}$


List in order from least to greatest.

5. $\frac{1}{2}$, $\frac{4}{10}$, $\frac{1}{4}$, $\frac{3}{4}$

Exercises

Use $>$ or $<$ to make a true statement.

1. $\frac{2}{4}$  $\frac{2}{10}$

2. $\frac{1}{2}$  $\frac{3}{4}$

List in order from least to greatest.

3. $\frac{1}{4}$, $\frac{3}{10}$, $\frac{2}{4}$, $\frac{1}{10}$

Who won each pair of cards? Who won the most cards?

4.

$\frac{1}{4}$	$\frac{30}{100}$
---------------	------------------

Mara

Joey

5.

$\frac{40}{100}$	0.5
------------------	-----

Mara

Joey

6.

$\frac{2}{4}$	$\frac{1}{2}$
---------------	---------------

Mara

Joey

7.

$\frac{9}{10}$	$\frac{20}{100}$
----------------	------------------

Mara

Joey

8.

$\frac{7}{10}$	0.10
----------------	------

Mara

Joey

9.

$\frac{3}{4}$

Mara

$\frac{8}{10}$

Joey

10.

$\frac{6}{10}$

Mara

0.60

Joey

11.

0.40

Mara

0.8


Joey


RULES FOR THE GAME

- Deal all the cards.
- Each player turns up 1 card at a time.
- The player whose card shows the greater number wins both cards.
- If both cards show equal numbers, each player places 3 cards face down. Then each turns up another card. Compare. The greater number wins the 10 cards that have been played.
- When the game ends, the player with the most cards is the winner.




Fraction Names for 1

If  is $\frac{1}{2}$, then

 is $\frac{2}{2}$.

But

 is 1.

$\frac{2}{2}$ and 1 name the same amount.

$$\frac{2}{2} = 1$$

If  is $\frac{1}{10}$, then

 is $\frac{10}{10}$.


But

 is 1.


$\frac{10}{10}$ and 1 name the same amount.

$$\frac{10}{10} = 1$$

If  is $\frac{1}{4}$, then

 is $\frac{4}{4}$.

But

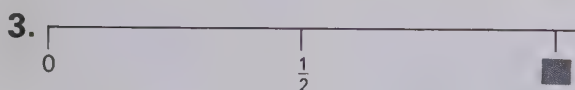
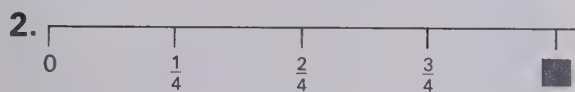
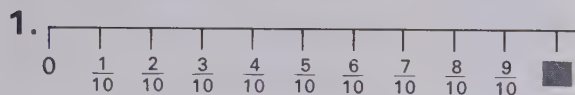
 is 1.

$\frac{4}{4}$ and 1 name the same amount

$$\frac{4}{4} = 1$$

Working Together

Give a fraction name for 1 for each number line.



Use tracing paper and draw a shape for 1,

4. if  is $\frac{1}{2}$.

5. if  is $\frac{1}{4}$.

Exercises

Write the fraction name for 1 that fits each pattern.

1. $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \dots$

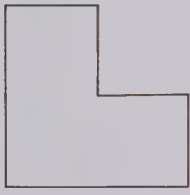
2. $\frac{2}{10}, \frac{4}{10}, \frac{6}{10}, \frac{8}{10}, \dots$

Use tracing paper and draw a shape for 1,

3. if  is $\frac{1}{2}$.

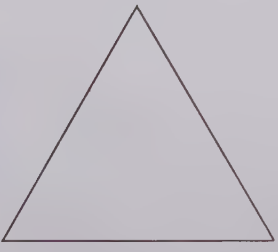
4. if  is $\frac{1}{4}$.

5. if  is $\frac{1}{2}$.

6. if  is $\frac{1}{4}$.

Draw two different shapes for 1,

7. if  is $\frac{1}{2}$.

8. if  is $\frac{1}{4}$.

Adding Fractions

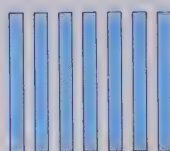
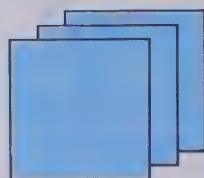
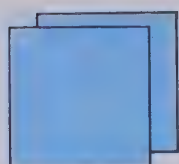
Add $2\frac{3}{10}$ and $1\frac{4}{10}$.

$$2\frac{3}{10}$$

$$1\frac{4}{10}$$

$$\hline 3\frac{7}{10}$$

Add tenths.
Then add
ones.



You can add the
matching decimals
to check your work.

$$2.3$$

$$1.4$$

$$\hline 3.7$$

Add tenths.
Then add
ones.

The sum of $2\frac{3}{10}$ and $1\frac{4}{10}$ is $3\frac{7}{10}$.

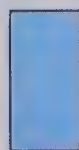
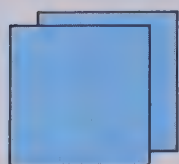
Add $1\frac{1}{2}$ and $2\frac{1}{2}$.

$$1\frac{1}{2}$$

$$2\frac{1}{2}$$

$$\hline 3\frac{2}{2}$$

Add halves.
Then add
ones.



With decimals
the addition
looks like this:

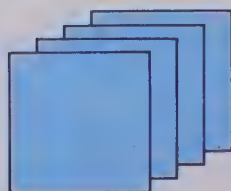
$$\begin{array}{r} 1 \\ 1.5 \\ 2.5 \\ \hline 4.0 \end{array}$$

Remember

$$\frac{2}{2} = 1, \text{ so } 3\frac{2}{2} = 4.$$

or

$$4$$






When decimals are used to
check work with fractions,
remember that numerals
like 4, 4.0, and 4.00
all name the same number.


The sum of $1\frac{1}{2}$ and $2\frac{1}{2}$ is 4.

Working Together

Complete each pair of addition sentences.

1. $1 + 2 =$ 
 $\frac{1}{4} + \frac{2}{4} =$ 

2. $6 + 3 =$ 

$\frac{6}{10} + \frac{3}{10} =$ 

Add the fractions. Then
add the whole numbers.

5. $1\frac{2}{10} + 4\frac{5}{10}$

6. $1\frac{1}{4}$
 $3\frac{1}{4}$

Add. The sums for each pair should match.

9. $\frac{6}{10} + \frac{2}{10}$
 $0.6 + 0.2$

10. $1\frac{1}{4}$ 1.25
 $2\frac{3}{4}$ 2.75

Add the whole numbers to complete each addition.

3. $1\frac{2}{4} + 2\frac{1}{4} = \boxed{\hspace{1cm}} \frac{3}{4}$

4. $3\frac{5}{10}$
 $2\frac{1}{10}$

 $\frac{6}{10}$

Rename the sum.

7. $3\frac{3}{10} + 1\frac{7}{10} = 4\frac{10}{10}$

$$\begin{array}{r} 8. \quad \frac{1}{4} \\ \quad \frac{3}{4} \\ \hline \quad \frac{4}{4} \end{array}$$

Add. Check by
using decimals.

11. $1\frac{4}{10} + \frac{6}{10}$

12. $4\frac{1}{4}$
 $2\frac{2}{4}$

13. $1\frac{1}{2}$
 $3\frac{1}{2}$

Exercises

Add. Check by using decimals.

1. $2\frac{1}{4} + 3\frac{1}{4}$

2. $1\frac{3}{10} + \frac{2}{10}$

3. $2\frac{1}{2} + 3\frac{1}{2}$

4. $\frac{8}{10} + \frac{2}{10}$

5. $2\frac{3}{4} + 1\frac{1}{4}$

6. $3\frac{1}{2} + 2$

7. $2\frac{5}{10} + 4\frac{5}{10}$

8. $3 + 1\frac{3}{4}$

9. $1\frac{3}{4}$
3

10. $1\frac{5}{10}$
 $1\frac{3}{10}$

$$\begin{array}{r} 11. \quad 2\frac{7}{10} \\ \quad 3\frac{3}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 1\frac{2}{4} \\ \quad \quad \frac{2}{4} \\ \hline \end{array}$$

13. $\frac{7}{10}$
 $3\frac{1}{10}$

14. $2\frac{4}{10}$
 $5\frac{3}{10}$

15.
$$\begin{array}{r} 4\frac{1}{2} \\ 4\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 3\frac{1}{4} \\ \quad 6\frac{3}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 1\frac{2}{10} \\ \quad 1\frac{6}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 8 \frac{2}{10} \\ \quad 2 \frac{8}{10} \\ \hline \end{array}$$

Solve.

- 19.** Martha had $3\frac{1}{2}$ biscuits.
 Danny had $1\frac{1}{2}$ biscuits.
 How many did they have in all?

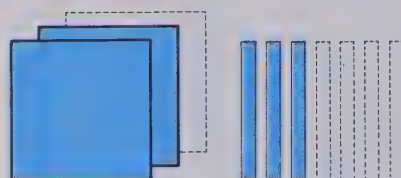
- 20.** Liz read $2\frac{3}{4}$ pages yesterday and $3\frac{1}{4}$ pages today. How many pages did she read in all?

Subtracting Fractions

Subtract $1\frac{4}{10}$ from $3\frac{7}{10}$.

Subtract tenths. Then subtract ones.

$$\begin{array}{r} 3\frac{7}{10} \\ - 1\frac{4}{10} \\ \hline 2\frac{3}{10} \end{array}$$



You can subtract the matching decimals to check your work.

Subtract tenths. Then subtract ones.

$$3.7$$

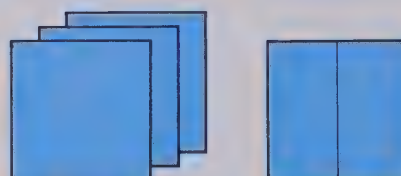
$$1.4$$

$$\hline 2.3$$

$$3\frac{7}{10} - 1\frac{4}{10} = 2\frac{3}{10}$$

Subtract $2\frac{1}{2}$ from 4.

First, think of 4 as $3\frac{2}{2}$.



$$4 \longrightarrow \text{becomes} \longrightarrow 3\frac{2}{2}$$

$$2\frac{1}{2} \longrightarrow 2\frac{1}{2}$$

$$\hline \text{Next, subtract halves. Then subtract ones.} \longrightarrow 1\frac{1}{2}$$



With decimals the subtraction looks like this:

$$\begin{array}{r} 3\ 10 \\ 4.\cancel{0} \\ - 2.5 \\ \hline 1.5 \end{array}$$

$$4 - 2\frac{1}{2} = 1\frac{1}{2}$$

When decimals are used to check work with fractions, remember that numerals like 4, 4.0, and 4.00 all name the same number.

Working Together

Subtract the fraction. Then subtract the whole number.

$$1. \quad 3\frac{2}{4} - 1\frac{1}{4} \quad 2. \quad \begin{array}{r} 5\frac{9}{10} \\ 2\frac{2}{10} \\ \hline \end{array}$$

Regroup 4 as 3 and a fraction. Then subtract.

$$3. \quad 4 - 1\frac{1}{2} \quad 4. \quad \begin{array}{r} 4 \\ 2\frac{7}{10} \\ \hline \end{array}$$

Subtract. The differences for each pair should match.

$$5. \quad \begin{array}{r} 2\frac{6}{10} - \frac{5}{10} \\ 2.6 - 0.5 \end{array} \quad 6. \quad \begin{array}{r} 6 \\ 3\frac{1}{4} \\ \hline \end{array} \quad \begin{array}{r} 6.00 \\ 3.25 \\ \hline \end{array}$$

Subtract. Check by using decimals.

$$7. \quad 5\frac{3}{4} - 2\frac{1}{4} \quad 8. \quad \begin{array}{r} 3 \\ 1\frac{3}{10} \\ \hline \end{array}$$

Exercises

Subtract. Check by using decimals.

1. $3\frac{2}{4} - 1\frac{1}{4}$	2. $5 - 2\frac{1}{2}$	3. $4\frac{3}{4} - 1\frac{3}{4}$	4. $1 - \frac{1}{4}$
5. $6\frac{8}{10} - 4\frac{7}{10}$	6. $3 - 1\frac{3}{4}$	7. $2 - \frac{1}{2}$	8. $8 - 2\frac{1}{10}$
9. $7\frac{4}{10}$ $\quad 1\frac{3}{10}$ $\quad \hline$	10. $6\frac{1}{2}$ $\quad 2$ $\quad \hline$	11. 2 $\quad \frac{9}{10}$ $\quad \hline$	12. 5 $\quad 4\frac{2}{4}$ $\quad \hline$
13. $1\frac{8}{10}$ $\quad \frac{3}{10}$ $\quad \hline$	14. $6\frac{3}{4}$ $\quad 5\frac{1}{4}$ $\quad \hline$	15. 7 $\quad 6\frac{1}{2}$ $\quad \hline$	16. $9\frac{9}{10}$ $\quad 4\frac{4}{10}$ $\quad \hline$
17. 5 $\quad 1\frac{8}{10}$ $\quad \hline$	18. $3\frac{1}{2}$ $\quad 3\frac{1}{2}$ $\quad \hline$		

Is there a fair way to share the 1 that remains when

- | | |
|---|---|
| 1. 2 boys share 7 marbles? | 2. 2 girls share 7 apples? |
| 3. 7 chairs are to be divided equally between 2 tables? | 4. 2 children share drying the dishes for a week? |
| 5. 2 girls share 7 dimes? | 6. 2 boys share 7 nickels? |
| 7. 7 rabbits are to be divided equally between 2 pens? | 8. 2 brothers share 7 hats? |

**PROBLEM
SOLVING**

Does the Statement Make Sense?



A decimal point is missing in the recipe.
The recipe should say, "Add 1.5 kg of potatoes."

Where would you place the decimal point
so that each statement makes sense?

1. Earl was sent to the store with \$225 for a jug of milk.
2. The scale showed that Edward gained 125 kg in one week.
3. Helen drank 15 L of milk today.
4. Kristin's mother is 17.5 m tall.
5. The belt Lee wears is 8.75 cm long.
6. First base was placed 2.5 m from home plate.
7. Tina has the flu and a temperature of 385°C.
8. Hugo can write his name in 0.25 s.
9. Kate ate 35 pancakes for lunch.
10. Anna bought an apple for \$20.
11. Cliff bought two new record albums for \$1.25.

**PROBLEM
SOLVING**

Are other
changes needed?

Checking Up

Write each of these as
a decimal showing tenths.

1. $\frac{1}{2}$ 2. $2\frac{9}{10}$ 3. $3\frac{1}{2}$

Write each of these as
a decimal showing hundredths.

4. $1\frac{1}{4}$ 5. $2\frac{1}{2}$ 6. $\frac{3}{4}$

Write a fraction to complete each sentence.

Use fourths or one-half where possible.

7. $1.50 = \frac{\quad}{\quad}$ 8. $0.7 = \frac{\quad}{\quad}$ 9. $2.75 = \frac{\quad}{\quad}$ 10. $0.25 = \frac{\quad}{\quad}$

Use $>$, $<$ or $=$ to make true statements.

11. $\frac{1}{2} \bigcirc 0.6$ 12. $1.75 \bigcirc 1\frac{3}{4}$ 13. $\frac{1}{4} \bigcirc \frac{1}{2}$

14. $\frac{3}{4} \bigcirc \frac{7}{10}$ 15. $0.2 \bigcirc \frac{1}{4}$ 16. $\frac{4}{4} \bigcirc 1$

17. $2\frac{1}{4} \bigcirc 2.25$ 18. $1\frac{2}{2} \bigcirc 2$ 19. $\frac{3}{4} \bigcirc \frac{1}{2}$

List in order from least to greatest.

20. $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{3}{10}$ 21. $\frac{2}{4}, \frac{4}{10}, \frac{3}{4}, \frac{6}{10}$

Add.

22. $\frac{3}{10} + \frac{5}{10}$ 23. $3\frac{1}{2} + \frac{1}{2}$ 24. $1\frac{1}{4} + 2\frac{1}{4}$

25. $3\frac{1}{4} + \frac{3}{4}$ 26. $1\frac{1}{2} + 2$ 27. $1\frac{2}{10} + 1\frac{8}{10}$ 28. $4\frac{1}{4} + 3\frac{2}{4}$

Subtract.

29. $\frac{2}{4} - \frac{1}{4}$ 30. $3\frac{7}{10} - 1\frac{7}{10}$ 31. $2 - \frac{1}{2}$

32. $5 - 3\frac{1}{2}$ 33. $2\frac{3}{4} - \frac{1}{4}$ 34. $6\frac{9}{10} - 2$ 35. $4 - 1\frac{3}{4}$

36. If  is $\frac{1}{2}$,

which of these show 1?

A



B



C



Symbols

mm	millimetre	s	second
cm	centimetre	min	minute
dm	decimetre	h	hour
m	metre	d	day
km	kilometre	+	plus
cm ²	square centimetre	−	minus
dm ²	square decimetre	×	times
m ²	square metre	÷	divided by
cm ³	cubic centimetre	=	is equal to, equals
dm ³	cubic decimetre	>	is greater than
m ³	cubic metre	<	is less than
mL	millilitre	.	decimal point
L	litre	\$	dollars
g	gram	¢	cents
kg	kilogram	\overline{AB}	line segment AB
°C	degree Celsius	\overleftrightarrow{AB}	line AB

Table of Related Units

10 mm = 1 cm	(10 millimetres = 1 centimetre)
10 cm = 1 dm	(10 centimetres = 1 decimetre)
10 dm = 1 m	(10 decimetres = 1 metre)
100 cm = 1 m	(100 centimetres = 1 metre)
1000 mm = 1 m	(1000 millimetres = 1 metre)
1000 m = 1 km	(1000 metres = 1 kilometre)
1000 mL = 1 L	(1000 millilitres = 1 litre)
1000 g = 1 kg	(1000 grams = 1 kilogram)
100¢ = \$1.00	(100 cents = 1 dollar)
60 s = 1 min	(60 seconds = 1 minute)
60 min = 1 h	(60 minutes = 1 hour)
24 h = 1 d	(24 hours = 1 day)
7 d = 1 week	(7 days = 1 week)
365 d = 1 year	(365 days = 1 year)
366 d = 1 leap year	(366 days = 1 leap year)
52 weeks = 1 year	
12 months = 1 year	

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